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PLATE I.



Nævus Lipomatodes.

(From a Photograph of one of the author's patients.)

A PRACTICAL TREATISE

ON

DISEASES OF THE SKIN

FOR THE USE OF

STUDENTS AND PRACTITIONERS

BY

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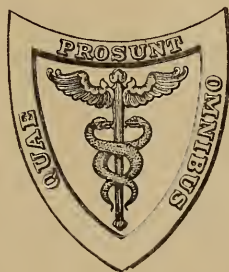
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SIXTH AND REVISED EDITION

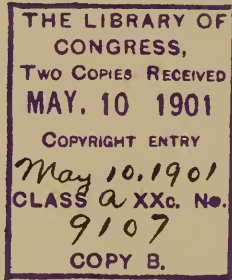
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TO

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FIRST PRESIDENT OF THE

AMERICAN DERMATOLOGICAL ASSOCIATION

THIS TREATISE IS

WITH HIS PERMISSION

INSCRIBED

PREFACE TO THE SIXTH EDITION.

THE rapid exhaustion of the Fifth Edition of this work has necessitated a revision at a date earlier than was anticipated. Among the subjects that have been wholly or in part rewritten for this Sixth Edition are: Anatomy, General Diagnosis, Herpes Simplex, Herpes Zoster, Acne, Psoriasis, Scleroderma, Tuberculosis, Blastomycosis, and Carates. Minor changes and additions have been made wherever necessary to place the work abreast of the most recent developments in dermatology.

Three new plates and some new engravings have been added.

In this, as in the preceding edition of the treatise, the names of authors mentioned in the text refer to their latest editions.

PUBLISHERS' NOTE.

THE history of this work is one of growing appreciation and success. Its first edition appeared in 1883, the second in 1888, the third in 1893, the fourth in 1897, the fifth toward the close of 1899, and the sixth early in 1901. One year has, accordingly, sufficed to exhaust a larger edition than was ever before published, and has again brought to the authors the opportunity of revising their work thoroughly to date, as they had done on every previous occasion. This standard treatise has come to be regarded as a source of information which can be trusted to give always the best and latest knowledge of practical dermatology.

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I. ANATOMY AND PHYSIOLOGY OF THE SKIN.

THE skin is the living envelope of the human body ; it is closely associated with underlying structures, and by its situation is brought into intimate relation also with the external world. The skin is a complex, elastic, and sensitive organ, varying greatly in different conditions of climate, age, sex, health, and race ; and varying also in the characteristics exhibited in different localities upon the same individual. Thus, in color there is a wide range between the fair skin of the blonde and the black skin of the negro, between the rosy pink of the infant's palm and the dark-brown hue of the genital region of the aged. The skin varies also in pliability and thickness, being delicate and lax over the eyelids, the lips, and the prepuce ; and much thicker and more firmly attached over the palms and the soles.

The appearance of the skin, even in conditions of health, changes within appreciable limits. It is the exposed parts (such as the face) which the eye of the physician most frequently searches, and which betray evidence of mental emotions, physiological fluxes, sedentary or active habits of life, and fatigue or unusual conditions of vigor.

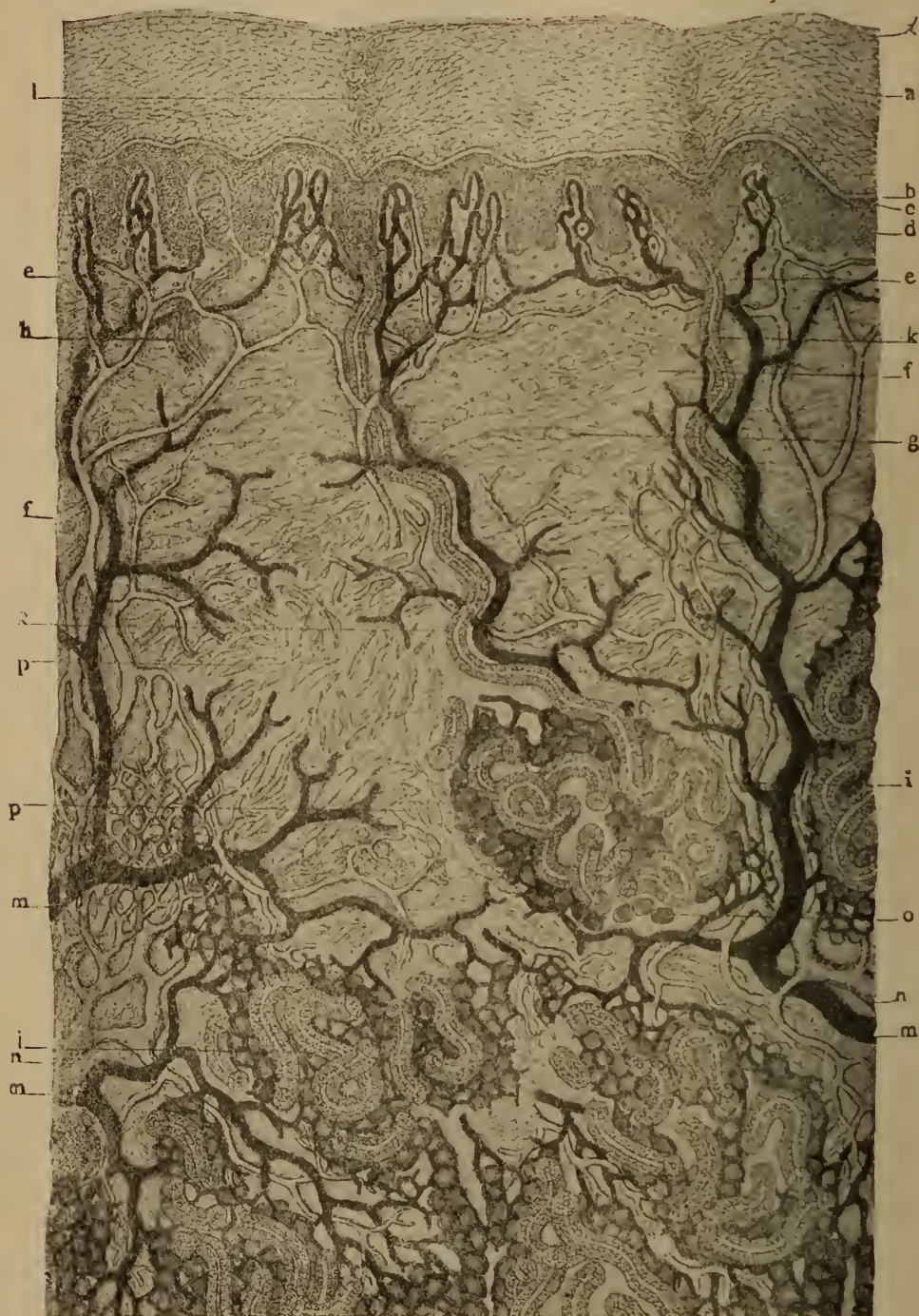
Viewed externally, the skin is seen to be traversed by superficial and deeper furrows, dotted with numerous depressions representing the mouths of its follicles, at the digital extremities protected by the nails, and provided very generally with coarse or with fine, downy hairs, which in some parts are of sufficient growth to conceal the skin from view. This pilary growth serves not merely as an ornament of the body, but also as a protection to some of its regions most sensitive to thermal changes.

By its extraordinary sensitiveness to different degrees of temperature and to the physical properties of the bodies with which it is brought into contact the skin becomes, even when unaided by the eye, a valuable means of preserving the human frame from external injury. This protective function is, in part, due to the horny character of its outer layer, as a consequence of which the loss of essential fluids and the ingress of noxious substances are equally restricted.

One of the most important functions of the skin is the part it plays in regulating the body-temperature. The temperature-variations at its surface, modified naturally by the character and quantity of the clothing when such is worn, produce corresponding variations in the smooth muscles and contractile blood-vessels of the skin. By enlargement or diminution of the lumen of these vessels, whether resulting directly from the action of heat or of cold at the surface, or indirectly through an effect upon the vasomotor centres, large quantities of blood

are brought to or removed from the superficies of the body. In one case the blood is cooled by evaporation at the body-surface; in the other, the loss of heat by such evaporation is greatly restricted. This

FIG. 1.



Section of skin from the palm of the hand, magnified 150 diameters: a, stratum corneum; a', its superficial layer; b, stratum lucidum; c, stratum granulosum; d, stratum mucosum (rete); e, pars papillaris of the corium, loops of capillary vessels showing in vascular papillæ; f, pars reticularis of the corium, showing coarse interlacing connective-tissue bundles; g, transverse section of the latter; h, double-contoured nerve-fibres passing to tactile body; i, coil-glands; k, ducts of coil-glands; l, sweat-pores passing to surface of the epidermis; m, arteries of the skin terminating in capillaries; n, veins of the skin forming plexuses; o, fat-cells, encompassed by capillary loops, in relation with coil-glands (the capillaries of the latter are purposely omitted in the drawing); p, obliquely and transversely divided bundles of connective-tissue fibres of the corium and subcutaneous tissue.

process is materially influenced by acceleration or retardation of the heart's action, whether produced by psychical or by physical causes. It is also modified by the occurrence of sweating, as a result of which heat in varying amounts is rendered latent, and either watery vapor escapes from the surface or sweat is exuded in drops, the aggregate of which may be several pounds in weight in the course of twenty-four hours.

To a limited degree the skin is capable of acting as a respiratory agent, eliminating carbonic acid gas with watery vapor, and possibly also absorbing oxygen in small amount. Its power of absorbing aliments, medicaments, and toxic substances has as yet but imperfectly been determined. Substances in a liquid state are practically not absorbed so long as the horny layer of the epidermis is intact. With this layer intact minute particles of matter have been conveyed to the deeper structures in the operations of skiagraphy, of cataphoresis, and of dielectrolysis. The actual loss, however, of this external protective layer permits the ready absorption of many liquids. Gases may be absorbed by the unbroken skin, and to a less extent are some fats and oils, as well as a few substances in a finely powdered state. Such absorption, when it occurs, is probably effected through the portal of a hair-follicle and the ducts of the cutaneous glands.

The skin is provided with a natural unguent, by which, in a state of health, it is constantly anointed. The fatty and oily secretions of the skin are concerned not merely in the anointing of the general surface and of the hairs, but also in the regulation of the body-temperature and in the prevention of maceration of the tissues by the sweat.

The complex organ called the skin is essential to the life of the individual. The sexual, and possibly other, organs of the human body may have their functions arrested, or they may even be obliterated by destructive processes, and life still continue; but if all the functions of the skin were suspended for a sufficient period of time the result would be fatal to human life. In its relations alone to the complicated processes by which the heat of the body is maintained at a relatively fixed standard the skin exhibits its importance to the general economy. It is thus seen to be, not an isolated membrane stretched mechanically over an artificial machine, but is one of several living and potential systems of the body, each system being in intimate union with all others.

DEVELOPMENT OF THE SKIN.—The corium is developed in intra-uterine life from the superficial layer of the mesoblast (the "skin-plate" of Remak). Its lower portions become first visible in a myxofibrous structure, which between the seventh and eighth months is replaced by a collagenous substance, from which the bundles of connective tissue develop, finer fibrillæ becoming later elastic fibres.

The epidermis springs from the ectoderm, and has therefore no primary histological relation with the corium, though at about the fourth month it is projected upon the papillary layer so as to give rise to the grooves and interdigitations which produce in the skin of the adult an important and intimate connection between the two. At first a single layer, later two, three, and more rows of prickle-cells develop up to the fifth month, the horny covering persisting up to the seventh

month merely as a thin stratum composed of but two rows of cells. The appendages of the skin are mostly developed between the sixth and eighth months.

The integument of the body, when studied with the aid of the microscope, is found to be composed of several organic parts, which are: the subcutaneous connective tissue (the hypoderm), resting on the deeper structures of the body; then, more externally, the corium, or true skin; lastly, an outermost coat, the epidermis, or cuticle. Beside these parts, the skin contains coil-glands, sebaceous glands, hairs, nails, blood-vessels, lymph-vessels, muscles, pigment, and nerves. It will be instructive to study the deeper parts of the skin before considering those more superficially disposed, as their mutual relations will thus be made clearer.

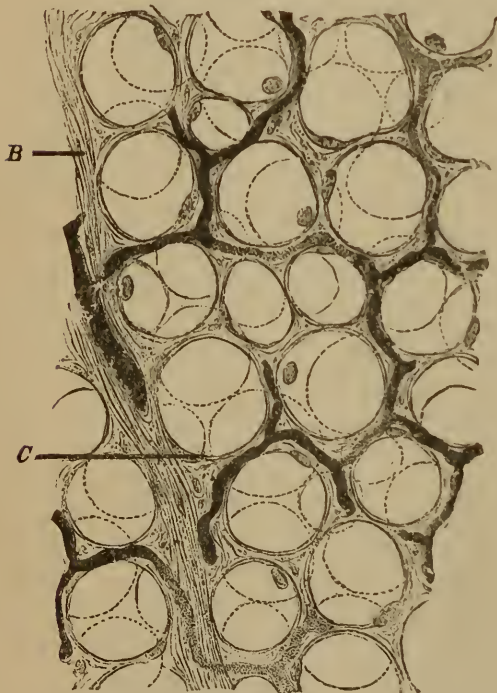
SUBCUTANEOUS TISSUE (STRATUM SUBCUTANEUM).

The subcutaneous tissue, or hypoderm, is differentiated from the corium between the third and the fourth month of fœtal life. It is a structure serving a mechanical purpose as a receptacle for fat, and for the support of vessels and nerves passing from the tissue beneath to the corium which lies next above it. It contains, also, coil-glands,

some of the hair-follicles more deeply seated than their fellows, and Pacinian corpuscles. There is no distinct boundary-line between the upper limits of the subcutaneous tissue and the overlying corium, to which it projects columnar masses of fat, extending obliquely to the coil-glands and the hair-follicles above, often with lateral, horizontally disposed prolongations of similar shape. It is built up of loose connective-tissue bundles, prolonged from the aponeuroses, fasciæ, and the membranes lying beneath.

The subcutaneous tissue is firmly attached to the skin over the extensor surfaces of the articulations, the palms and soles, and the groins by short, coarse bundles, between which are single or multilocular spaces lined with endothelia secreting a mucoid fluid. These spaces are the **Bursæ Mucosæ**. Elsewhere, as in the eye-

FIG. 2.



Subcutaneous fat-tissue, the fat having been extracted with turpentine: *B*, bundles of fibrous connective tissue, carrying injected blood-vessels; *C*, capsules of fat-globules, with oblong nuclei. Magnified 500 diameters. (After HEITZMANN.)

lids, the penis, the scrotum, and the auricle of the ear, the attachment to the skin is by loose, delicate connective tissue containing no fat-

globules. All other fibrous tracts are arranged obliquely; they admit, by their extension, of various degrees of pliability, and inclose rhomboidal spaces containing more or less numerous fat-globules. These spaces are lobulated, are bounded by a delicate fibrous connective tissue, and are abundantly supplied with blood-vessels. This layer is termed the **Panniculus Adiposus**.

The deposit of fat in the body is greatly reduced in all diseases productive of emaciation, but never wholly disappears during life. In cases of obesity, fat is deposited in excess of normal limits, and it may then be concerned in the production or the aggravation of disease. It is largely due to the greater or lesser volume of the panniculus adiposus that the natural outlines of the body are made to the eye graceful and attractive, or the reverse.

Columnæ Adiposæ (FAT-COLUMNS OF WARREN).—These are columnar prolongations from the adipose tissue of the panniculus adiposus below, passing in nearly vertical position to the bases of the hair-pouches, especially conspicuous in the thickened integument of the back, the neck, and the shoulders. The columnar axes are more or less parallel with the *erectores pilorum* muscles, and aid in supporting the coil-glands and the blood-vessels and lymphatic vessels. The *cônes fibreux* of the French are cone-shaped masses of connective tissue which extend from the lower borders of the corium, and which penetrate for a space into the adipose tissue. The part which these components of the skin play in the formation of carbuncle is set forth in that connection.

THE CORIUM.

The corium (DERMA, CUTIS, CUTIS VERA, or TRUE SKIN) is composed of bundles of fibres of connective tissue, the decussations of which produce a dense felt-work, coarsest toward the subcutaneous tissue upon which it rests inferiorly, and finest in the outermost portion which is in contact with the epidermis above. The bundles are composed chiefly of fibres of white fibrous tissue, but are accompanied by a varying number of elastic fibres. Connective-tissue corpuscles are also present in small numbers. There is a "cement-substance," or basis-substance, surrounding all the fibres and holding the various elements of the skin together. The derma is rich in blood-vessels and capillaries, especially in the papillary layer, and contains many nerves, nerve-endings, and terminal nerve-organs. It further contains lymphatics, smaller muscle-fibres, hairs, sweat-glands, and sebaceous glands. Its thickness varies greatly with different individuals and at different ages. It is thinnest in the infant, and on the eyelids, the prepuce, and the inner surfaces of the labia majora. It is thickest in vigorous adults, and over the back, the buttocks, the palms, and the soles.

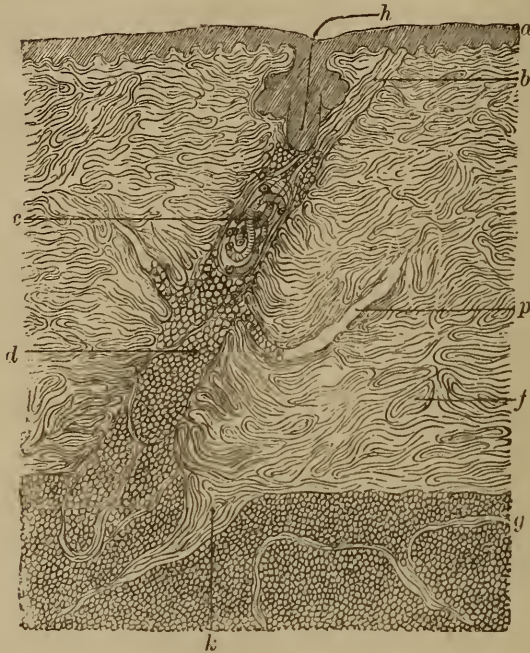
The bundles of the connective tissue of the derma accompany all elongations of an epithelial character. They produce the follicles around the root-sheaths of the hair, the capsules around the coil-glands, and the layers which surround their ducts.

Corresponding with their anatomical structure the upper and lower portions of the derma are called respectively the "papillary layer" and

the "reticular layer." There is no sharp dividing-line between these layers, the *pars reticularis* passing gradually into the *pars papillaris* above and into the subcutaneous tissue below.

CLEAVAGE OF THE SKIN.—The fibres and bundles of connective tissue in the skin are arranged according to a definite plan. Puncture

FIG. 3.



Vertical section of the skin showing : *a*, epidermis; *b*, erector pili muscle; *d*, columnæ adiposæ; *c*, coil-gland suspended in the columnæ adiposæ; *h*, sebaceous gland; *p*, horizontal prolongations of the column; *f*, fibrous bundles of the corium; *g*, panniculus adiposus; *k*, band of fibrous tissue extending into the panniculus adiposus. (After WARREN.)

of the integument with a sharp and well-rounded instrument is productive not of a circular opening, but of a longitudinal slit. The extensibility and retractive power of the skin are largely dependent upon the arrangement of these fibres.

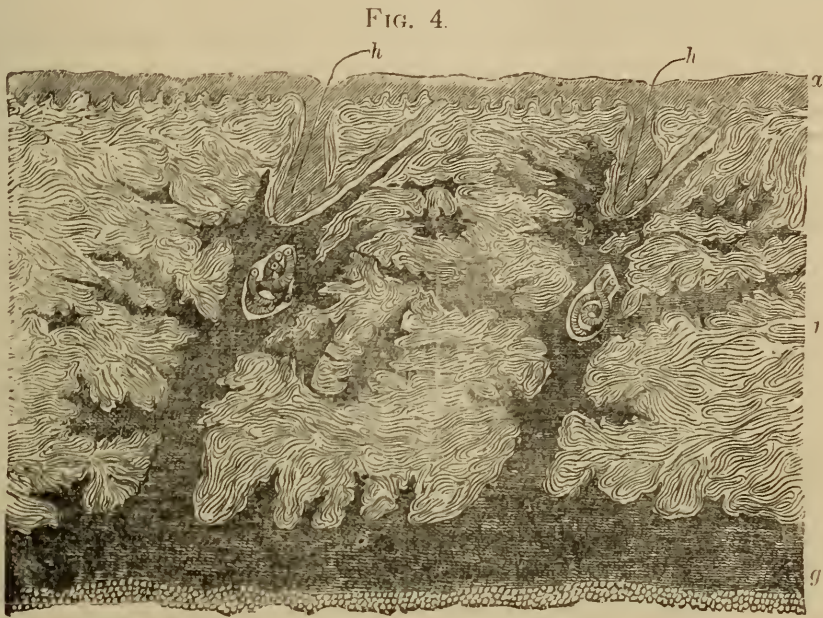
Pars Reticularis.—The reticular layer of the corium is made up, as has been seen, of interlacing connective-tissue bundles, with interspaces increasingly larger from without inward. The fineness of the bundles decreases, in the same way, from within outward, being finest where the minute papillæ of the corium project into the rete, and coarsest near the subcutaneous tissue.

Pars Papillaris.—The papillary layer of the corium lies in contact with the rete above, and is connected below with the deeper reticular portion of the true skin. Between the rete and the papillæ of the derma a hyaline substance is interposed, which is supposed to be identical with the cement-substance surrounding and separating the fibrillæ of the corium. The basal membrane once thought to be stretched between the rete mucosum of the epidermis and the papillary layer of the corium cannot be demonstrated to exist.

Viewed obliquely with an amplification of about three hundred diameters, it will be seen that long and slender filaments from the prickle-cells of the mucous layer of the epidermis encircle in a spiral

direction both nervous and vascular papillæ. At the apices of the latter these threads completely surround the connective-tissue fibres.

The name of this portion of the derma is intended to describe its chief characteristics, the existence of numerous digital prolongations or nipple-like prominences of the corium, made up of delicate connective-



Vertical section of skin after injection (from beneath) of areolar tissue with Berlin blue: *a*, epidermis; *f*, corium; *g*, panniculus adiposus; *h*, sebaceous gland. (After WARREN.)

tissue fibres which do not interlace and which are abundantly provided with nuclei. The papillæ spring each from a single, or several from a common, ovoid base; their bulbous, conical, or blunt apices reach into the rete, which also dips down between them in prolongations termed "rete-pegs." The papillæ vary in size in different parts of the body, and also in their disposition and shape, being in places arranged in linear series, and in others in concentric whorls, with definite centres, thus producing crossing-furrows, visible to the naked eye as markings upon the outer surface of the epidermis. The largest are found on the palms and soles and over the inner faces of the digits. It has been estimated that one hundred are developed within each square millimetre of the body-surface.

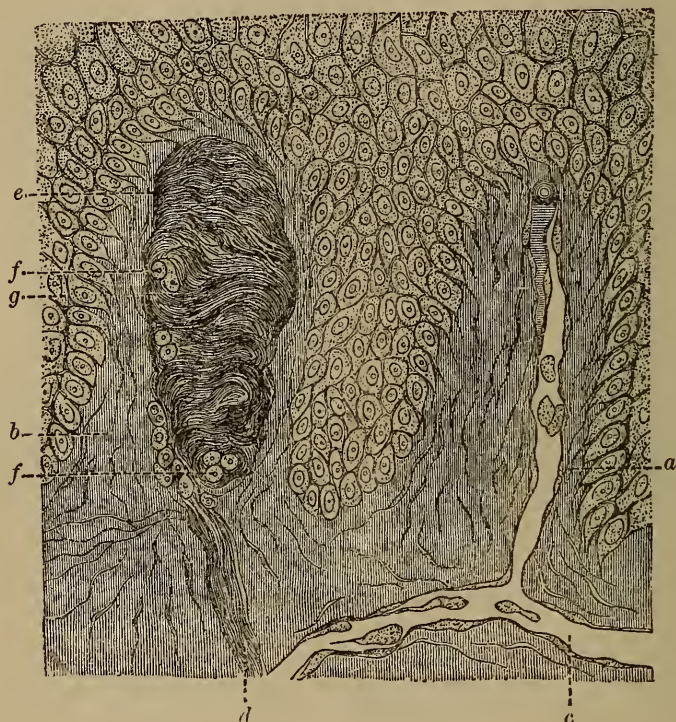
In horizontal sections of the skin the papillæ, being transversely divided, appear as circular or ovoid areas, in which can be recognized centrally a transversely or obliquely divided capillary loop. Between these areas is seen the interpapillary reticulum of the mucous layer.

The growth of the rete downward and of the corium upward results in mutual effects of pressure and counter-pressure the equilibrium of which is constantly adjusted by the mechanical and vital necessities of such union.

When the papillæ are completely exposed, after removal of the overlying cement-substance and of the epidermis above, their exterior surface is seen to be uniformly marked with series after series of

alternating furrows and ridges of exceeding delicacy and more or less concentrically disposed. Into the grooves are admitted corresponding dentations that can be recognized on the under surface of the layer of epithelial cells next the corium. They may, however, be the furrows left after separation of the long prickles wrapped about the papillæ and traceable to the mucous layer.

FIG. 5.



Vascular and nervous papillæ: *a*, vessel; *b*, nervous papilla; *c*, vessel; *d*, nerve-fibre; *e*, corpusculum tactus; *f*, transversely divided nervous filaments; *g*, epithelia of rete. (After BIESIADECKI.)

Two varieties of papillæ are distinguished—the vascular and the nervous; the former contain the terminal loops of a minute artery and vein, and the latter the terminations of medullated nerve-fibres.

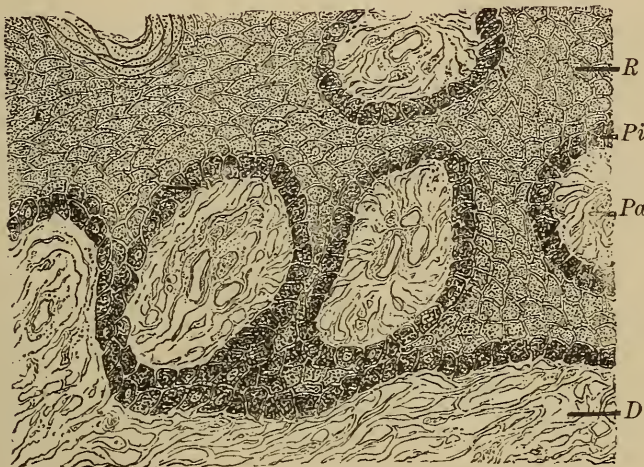
The greater number of the papillæ are of the vascular variety, being traversed by a vertically disposed loop of vessels, consisting of an arterial and a venous capillary. The office of the vascular loop is evidently not merely to supply nutriment for the epidermis above, but also to provide for the cooling of the blood when brought in large quantities to the surface of the body. Occasionally, two or more of such loops can be recognized in a single papilla.

The nervous papillæ contain the tactile corpuscles, which subserve an important purpose in providing for the sensibility of the integument. The tactile corpuscles are described in connection with the nerves of the skin. Ultimate terminations of nerves can be recognized in the vascular papillæ, and at times minute vascular loops can be seen in the papillæ largely occupied with the corpuscles of touch.

THE EPIDERMIS (CUTICULA).

The epidermis (SCARF-SKIN, or CUTICLE) is the most external of the several membranes of the body, being in close contact on one side with the corium, or true skin, and exposed on the other to the atmosphere by which it is surrounded. The latter surface is therefore relatively drier, while the former is constantly moistened by fluids from the vessels which ramify beneath it.

FIG. 6.



Scalp of a negro—horizontal section: *R*, rete mucosum; *Pi*, row of columnar epithelia (cut obliquely) supplied with dark-brown pigment-granules; *Pa*, papilla (cut transversely); *D*, derma. Magnified 500 diameters. (After HEITZMANN.)

No genetic relation exists between the epidermis and the corium, notwithstanding their intimate union and mutual relationship. The epidermis is developed from the ectoderm, the corium from a superficial layer of the mesoblast. Their behavior both in health and in disease is marked by the widest difference.

HERXHEIMER'S SPIRAL FIBRES begin with the line of union of the corium and epidermis, and run in a spiral or zigzag direction between the cells and parallel with their long axes. They are most abundant in the deeper portions of the rete, and lie for the most part parallel with the long axes of the palisade rete-cells. They have been supposed to be a part of the canal-system for the distribution of the juices sent to the rete. They are conspicuous in inflammatory states. Other views point to the protoplasmic character of the cell-spirals, as also to the possibility that they are related to the collagen of the corium.

The epidermis varies greatly in thickness in different portions of the body; for example, the epidermis of the palms and soles exceeds in vertical section that which covers the dorsum of the hands and feet, and that which protects such sensitive parts as the eyelids, lips, temples, and prepuce. The epidermis is composed of the following principal layers, named in order from within outward: the stratum mucosum, the stratum granulosum, the stratum lucidum, and the stratum corneum. Each of these strata, or layers, is histogenetically

derived from the one which is deeper in situation. Beside these, Ranvier and others recognize a stratum germinativum, a stratum filamentosum, a stratum intermedium, and a stratum disjunctum.

The **Rete Mucosum** (MUCOUS LAYER, PRICKLE-LAYER, STRATUM MUCOSUM, RETE MALPIGHII or MALPIGHIANUM) is the deepest of the epidermal layers, and rests upon the corium below. It is now generally designated as "the rete." The corium is intimately united with it by a series of interdigitations, which are commonly described

FIG. 7.



Prickle-cells from a condyloma (magnified about 625 diameters): *a*, cavity of cell-nucleus; *b*, nucleus; *c*, nucleolus; *d*, prickles—these are greatly developed on the protoplasm of the cells. The dots on the surface of the protoplasmic mass represent the appearance of the prickles when directed toward the eye of the observer. Some of the protoplasmic threads are seen passing from one cell to another.

as prolongations of the derma into the substance of the rete, but it is equally true that the rete sends down prolongations (the "rete-pegs") into the derma. The two, in the need of an intimate union to resist friction and to insure vascular supply, are thus closely locked together.

The stratum mucosum is built up of nucleated epithelial cells, polyhedral in outline and diffusely colored. These cells are masses of granular protoplasm, living matter, which by their relation to one another form a protoplasmic network enveloping the entire surface of the body and lining all channels and cavities in direct or indirect connection with the surface. These elements are flattened by reason of their apposition, and are separated from one another by an intercellular cement-substance. There is a system of channels between the epithelia by which the nutritive fluids are conveyed from cell to cell. All are, however, uninterruptedly united by delicate spokes, known as prickles, spines, or thorns. The living matter, which produces a delicate reticulum within each protoplasmic body, its points of intersection being termed nuclei, nucleoli, and granules, sends forth the filaments which produce continuity through all the living layers of the epithelial elements, as well as through the underlying layers of the connective tissue. The epithelia are unprovided with either blood-vessels or

lymph-vessels ; but are supplied with a large number of nerves, which, in the shape of very minute beaded fibres, traverse the intercellular substance, and which are in direct communication with the reticulum of living matter within the protoplasmic bodies themselves.

The masses of protoplasm just described play the most important part in all the pathological and physiological processes observed in the skin. It is probable that in the embryo all the appendages of the skin are formed directly by their assimilative and reproductive processes ; and it is certain that in health and in disease they are the ultimate source of all secretions.

Next the corium is a layer of cells, columnar in form, often largely provided with pigment, and arranged with their long axes nearly at right angles to the plane of that portion of the corium upon which they are superimposed. It is this row of cells which in certain cutaneous affections displays in largest measure the phenomena of karyokinesis. Segmentation of these cells occurs after a mitotic or thread-like metamorphosis of the nucleus in the deeper layers of the rete (*stratum germinativum*). More externally the cells are rounded or cuboidal in shape, with large, distinct nuclei. They are not arranged in definite strata except in the outermost layers, where the cells are somewhat flattened and elongated (*stratum filamentosum*). Between the cells in the deeper layers outwandered leucocytes may at times be recognized.

LANGERHANS' CELLS are elongated, irregularly stellate, non-nucleated bodies found chiefly in the deeper parts of the rete. They have been looked upon as pigment-cells devoid of pigment, as wandering cells, lymphoid cells, and as colorless tissue-corpuseles.

The **Stratum Granulosum** (*GRANULAR LAYER*) of the epidermis, lying immediately above the *stratum filamentosum*, is built up of three or four rows of horizontally disposed granular bodies, united to one another by short, broad threads. Between these bodies the intercellular spaces are so contracted that nutritive fluids cannot easily filter outward ; and the nuclei of the cells are usually shrunk. These have been studied carefully by Ranvier, Kölliker, Waldeyer, and others. According to these observers, the roundish granules which give this layer of epithelium its peculiar name and appearance consist of eleïdin or keratohyalin, a substance essential to the process of cornification in the elements making up the horny layer of the skin, nails, etc. These granules first appear in the neighborhood of the nuclei of some of the large prickle-cells in the rete, but they are best studied in the granular layer, the cells of which are often completely filled with them. According to Unna, the color of the skin in the white races depends upon this layer alone.

The **STRATUM INTERMEDIUM** of Ranvier is practically a subdivision of the *stratum lucidum*, from which it is distinguished chiefly by the fact that it takes a reddish stain after treatment with picrocarmine. It is here that the process of keratinization of the epidermis is first to be detected.

The **Stratum Lucidum** (*SEPTUM LUCIDUM*) of Oehl lies immediately above the *stratum intermedium*, and appears under the microscope as a delicate, brightly colored line consisting of two or three rows

of transversely disposed, glistening epithelia, differing in translucency from those situated on either side. The stratum lucidum thus marks with tolerable distinctness the boundary-lines of the rows of cells above and below it. Its epithelial bodies seem to have lost suddenly the refractive, shining granules of keratohyalin conspicuous in the stratum granulosum below. These granules are generally supposed to have disappeared in consequence of their solution in the protoplasm of the cell-body, which has thus acquired an added brilliancy and clearness.

The **Stratum Corneum** (HORNY LAYER) of the epidermis is its outermost and widest layer, extending from the stratum lucidum below to the external environments of the body. In its lower portion the polygonal plates of which it is composed indicate very clearly their relationship to the cells in the prickle-layer. The nuclei appear in places only as shrivelled and inconspicuous relics of the protoplasmic threads; or there may be merely vacant nuclear spaces marking their original site. Occasionally, on the edges, rudiments of the prickle-threads may still be recognized. More externally the dried, lifeless, horn-like plates of which this layer is composed become mere cornified shells, generally lying in horizontal strata, and becoming more curled and wrinkled as the surface of the skin is reached, often being imbricated, but preserving the polygonal outlines of epithelia relieved of the forces of pressure and counter-pressure exerted in the deeper parts of the epidermis. These elements are rarely pigmented, save in the case of the negro, in whom the intense staining of the deepest parts of the mucous layer extends measurably to the external strata. This staining in the colored races is produced by granules of pigment arranged about an unpigmented nucleus in the prickle-cells. The cells of the horny layer contain fatty material in very considerable proportion, a provision by which the suppleness of the skin is maintained and undue evaporation prevented.

After digestion with pepsin and trypsin the horny cells may be seen to be connected by more or less persistent threads, visible after prolonged digestion as a large-meshed reticulum, with strands formed from a double row of cornified filaments united by short horny bridges.

The STRATUM DISJUNCTUM of Ranvier is the most superficial of the layers of the stratum corneum, differing chiefly from the latter in that it is indifferently colored by osmic acid.

EPITRICHIAL LAYER.—Welcker,¹ Minot,² and Bowen³ have described a layer of large cells, with round nuclei much larger than those of the epidermal layers beneath, covering the entire body of the human embryo during the early months of its existence. This layer, histologically, is quite distinct from the outer cells of the stratum corneum, and corresponds with the epitrichium of certain animals. It usually disappears before the sixth or seventh month of uterine life.

¹ Ueber die Entwicklung und den Bau der Haut und der Haare bei Bradypus. Halle, 1854.

² American Naturalist, June, 1886.

³ Anatomischen Anzieger, iv. Jahrgang (1889), Nr. 13 u. 14; and Jour. Cutan. and Ven. Dis., 1895, p. 485.

BLOOD-VESSELS.

The arteries and veins supply the skin from subcutaneous branches which penetrate the underlying fasciæ, and proceed by subdivision to be distributed to all portions of the integument below the epidermis, the distribution being especially abundant about the glands and follicles of the skin and the inferior and superior parts of the corium. They are always more abundant upon the flexor than upon the extensor faces of the extremities. Just beneath the papillary layer of the corium there is a minutely ramifying plexus of fine capillaries, the loops of which extend into the papillæ above. This and the coarser plexus in the deeper portion of the derma are well defined, and have been designated as superior and inferior partes vasculares of the corium; also, as the upper and lower vascular net. They are connected by more or less regularly placed and nearly vertical communicating branches. A fourth division of the vascular system of the skin is found in the subcutaneous connective tissue, in which the vessels are numerous; a fifth is represented by the vessels distributed to the papillæ; and lastly, a sixth includes the vascular channels supplying the accessories of the integument.

The arterioles which supply the sweat-glands surround the coils of the latter in a delicate basket-like plexus, and terminate in two or three veinlets, one of which always accompanies the duct of the gland upward as far as the papillary layer, where it anastomoses with the vessels of that part of the skin. The ascending arterioles supply the sebaceous glands and hair-follicles, and, breaking up into smaller and yet smaller branches, finally furnish a single or a double capillary loop to each papilla. These capillaries of the papillary layer anastomose freely with those transversely arranged in the upper portion of the hair-follicles, from which loops also pass to the sebaceous glands. The hair-papilla has a vascular supply similar to that of each of the other papillæ of the corium.

Unna divides the vessels distributed to the skin into the papillary system and the system of the coil-glands and fat-tissue. The first system includes the ascending loops which traverse the vascular papillæ, and the branches supplying lower portions of the corium. The second system embraces the vessels running upward to the coil-glands and downward to the fat-tissue. In the papillary vascular system the arteries are narrow and the veins wide. Each of the vessels consists merely of an endothelial tube augmented, as the subcutaneous tissue is reached, by both media and adventitia. According to Hoyer, a singular duplex arrangement of vessels in the distal phalanges of both fingers and toes results in a distinct communication between the arteries and veins. Other observers deny the existence of such anastomosis.

Vasomotor nerves are twined around these vessels in all their ramifications. The whole vascular system, as thus arranged, plays a most important part in all the healthy and morbid processes which occur in the skin, as well as in the physiological changes distinguishable to the eye in the phenomena of blanching and blushing.

LYMPHATIC VESSELS.

The skin in all its parts is provided with a closed system of lymphatic channels, designed to subserve the necessities of the important processes of absorption, and traversed by lymph the currents of which are continuously directed to the large vessels of the structures beneath the skin. These channels include: first, juice-spaces, provided or not with independent walls, usually without, and not freely communicating with the endothelium-lined vessels; second, lymphatic vessels proper. These conduits do not connect with blood-vessels.

The juice-spaces, or lymph-spaces, separate the epithelial bodies which make up the stratum mucosum of the epidermis, and they also extend between the protoplasmic threads, or prickles, that unite them. Such conduits may be regarded either as delicate excavations in the cement-substance between the epithelia, or as irregular channels in a soft, viscid, albuminoid, and readily coagulable substance between the protoplasmic threads. At times this intercellular substance seems capable of obstructing the conduits by which it is tunnelled. These juice-spaces exist in the papillæ of the corium, and encircle the several glands, hair-follicles, and nail-beds of the skin. They also sheathe the connective-tissue fibrillæ of the corium and surround the fat-cells. According to Darier, the derma is a "true lymphatic sponge."

The lymphatic vessels are relatively few, but they form a continuous meshwork with transversely and vertically disposed branches supplying all parts of the skin below the epidermis. The juice-spaces communicate with these vessels in the papillary portion of the corium through minute orifices in the vascular walls, the vessels themselves being here represented by blind terminal loops. As these vessels pass to the deeper portions of the corium and below it they increase in size. The current of the lymph flows from the papillary apices to all parts of the rete, like the currents in the delta of a river, a reflux occurring at the lower limit of the interpapillary depressions of the rete downward, possibly through the sweat-pores which traverse the epidermis at these points. Thence the current flows freely downward to the lymphatic vessels in the corium, but the stream from the juice-spaces about the coil-glands and fat-tissue is retarded by reason of a more restricted communication with the lymphatic vessels below. In consequence of the retardation due to this anatomical peculiarity the formation of fat by filtration is facilitated.

NERVES.

The skin, in view of the number and mode of distribution of its nervous elements, may be regarded as a vast area of sensitive nerve-terminals. Non-medullated and medullated nerve-fibres, each in places being substituted for the other, are supplied to the skin from horizontally disposed bundles of nerve-twigs in the subcutaneous tissue. These fibres traverse the corium in connection with the blood-vessels, and become finer as they ascend, until they form a subepithelial plexus just below the epidermis.

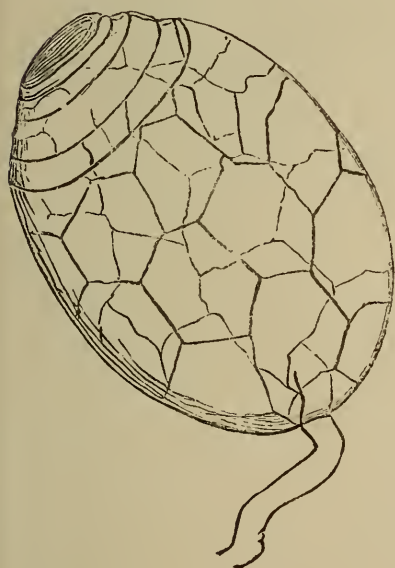
Exceedingly delicate **Non-medullated Fibres** penetrate in great abundance to the epidermis between the epithelia, and are not to be confounded with the migratory cells found in this situation. Here, traversing the intercellular substance by the side of the juice-spaces, these fibres either terminate between the prickle-cells as ultimate bulbous terminations of finely beaded fibrillæ, or penetrate the epithelia themselves in pairs. Each prickle-cell is supplied with a pair of these beaded filaments, which may be either applied to the nucleus of the cell or be seen to encircle the nucleus more or less completely. Above the stratum granulosum these nervous threads cannot be recognized.

Similar nerve-filaments are supplied to the sheaths of the hairs and the ducts of the coil-glands. It is by means of these numerous and delicate fibres that the perception of sensation in the skin is accomplished.

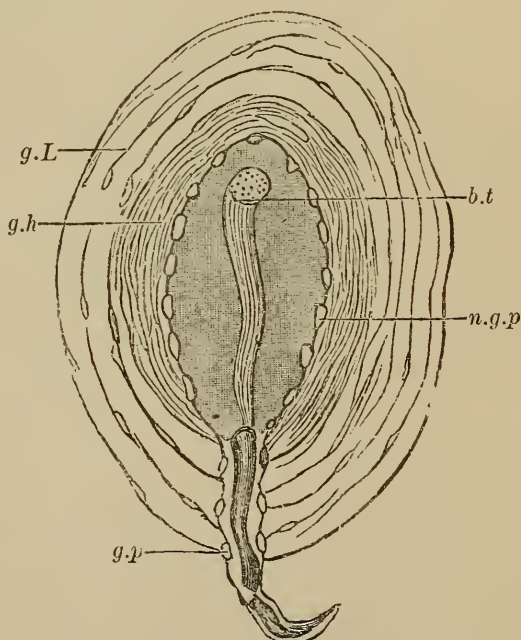
Motor filaments are also distributed to the sheaths of the blood-vessels (vasomotor nerves), in which they are finally lost. Other motor filaments supply the muscles, and trophic nerves are distributed to all the secreting organs of the skin and to all its protoplasmic formations.

The **Medullated Nerve-fibres** of the skin in one or several loops pass upward into the papillæ, and then turn backward to the subpapillary region. Some of these fibres, after such reversion, again ascend to an adjacent papilla; others are supplied to the Pacinian and tactile corpuscles.

FIG. 8.



Pacinian body, after silver staining, showing superimposed endothelial layers. (After RENAUT.)



Section of Pacinian body from a duck's bill; *g.L.*, lamellar envelope; *g.h.*, hyaline zone of the lamellar envelope; *b.t.*, terminal bulb of the nerve; *g.p.*, *n.g.p.*, layer investing the cavity of the body. (After RENAUT.)

The **Pacinian Corpuscles** (named from the anatomist Pacini), also called **CORPUSCLES OF VATER**, exist subcutaneously only upon nerves intended for cutaneous supply; they are ovoid bodies, two or more millimetres in diameter. Each corpuscle consists of a series of concentric,

nucleated, vascular capsules, arranged after the manner of the capsules of the onion, more closely united at the periphery than at the centre, and surrounding a protoplasmic core. The medullated nerve to which the body is attached gradually loses its myeline envelope, and terminates in the centre of this core, after traversing the greater part of its axis, in one or several minutely club-shaped filaments. The myeline

FIG. 9.



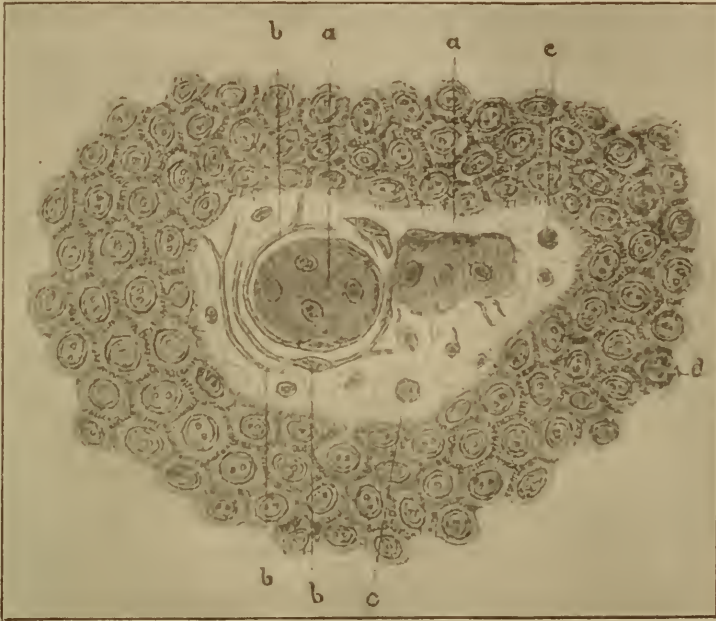
Section of a papilla still covered by a portion of the stratum mucosum and containing a tactile body (from the skin of a finger). The corpuscle of Meissner is seen to consist of minute lobules, made up of a homogeneous protoplasm, with numerous oval nuclei and nervous fibrillæ wound in a spiral direction about the mass of the corpuscle. The extension of the fibrillæ to the mucous layer is shown. The sources of the nerve-filaments are demonstrated to be: (1) the axis-cylinders of one or two double-contoured nerve-fibres, splitting into their original fibrillæ on arriving at the corpuscle, winding about the latter in characteristic spirals, and passing to the palisade-layer of the prickle-cells of the rete, between which, on account of the long prickles of the latter and the general resemblance of the two in thickness and contour, it is difficult to trace them further; (2) filaments from another double-contoured nerve-fibre (*h*) pass directly to the inferior layer of cells in the rete without establishing relations with the tactile body; (3) fibrillæ derived from the network of nervous fibrillæ in the pars papillaris of the corium (*k*), also passing more or less directly to the stratum mucosum. *a*, cells of the rete; *b*, prickles of the latter; *c*, body of papilla; *d*, nuclei of connective tissue forming papilla; *e*, protoplasmic part of the tactile body with its nuclei; *f*, fibrillæ of the corpuscle; *g*, double-contoured nerve-fibres directly supplying the rete; *k*, nervous fibrillæ derived from the network in the pars papillaris; *l*, nervous fibrillæ entering the epidermis between the rete-cells, leaving the corpusculum tactus at *m*.

sheath is lost in the tissue of the concentric capsules. The nerve may, after supplying one capsule, penetrate a second or even a third. In such cases the nerve regains its sheath as it issues from the corpuscle at its opposite pole. Robinson believes that the nerve forms a plexus or loop within the corpuscle, and escapes from it at one of its poles.

The precise function of the Pacinian corpuscle is unknown. Its

connection with the tactile sense is suggested by its location, since these bodies are most numerous in the subcutaneous tissue of the nipple, the penis, the digits, and in parts similarly sensitive. These corpuscles bear an analogy to the organ of vision: each body having a capsular character; each being provided with a special nerve-filament, which enters the corpuscle at one pole; each also receiving its impressions at the extremity of the capsule opposite that at which it receives its nervous supply.

FIG. 10.



Transverse section of nervous papilla surrounded by cells of the stratum mucosum: *a*, protoplasmic lobules of the corpusculum tactus; *b*, nervous fibrillae spirally wound about the latter; *c*, transverse section of double-contoured nerve-fibres; *d*, cavity of nucleus (out of focus).

According to Kranse, the Pacinian corpuscles aid in the appreciation of impressions produced by pressure and traction. Whether specially concerned in distinguishing sensations of heat, cold, moisture, pressure, traction, or weight, it is evident that they contribute but little, if at all, to the perception of ordinary impressions upon the skin, and they are not known to play any part in cutaneous diseases.

The **Tactile Corpuscles** (CORPUSCLES OF MEISSNER OR OF WAGNER) are ovoid bodies found in about one in four of the papillae in the pars papillaris of the corium. Each corpuscle is composed of from one to three capsules. Minute lobules of a homogeneous protoplasm with oval nuclei are found in each. These corpuscles receive medullated nerve-fibres, and are made up of closely compressed, flat connective-tissue fibres with minute nuclei, which are so packed together as to form a spindle-shaped mass occupying the greater part of the papilla in which each corpuscle is found and surrounded by a somewhat denser connective-tissue capsule. The myeline sheath of the nerve-fibres is lost in the fibrous tissue of the corpuscle. Externally viewed they seem to be transversely striated.

The axis-cylinder of the nerve-filament distributed to each corpuscle divides into numerous delicate nerve-threads which in part encircle the

corpuscles and also penetrate within. Each corpuscle is provided with an afferent and an efferent nerve, the former approaching the corpuscle from the subpapillary region and entering at or near its base. Occasionally the afferent fibre is furnished by an adjacent papilla. As the filament that enters the corpuscle frequently divides, two or more efferent fibres may then escape from it. Afferent fibres reach the rete above after encircling the tactile corpuscles; others, side by side, arrive at the rete without coming into contact with the former.

The discovery of nerve-filaments in and among the epithelia of the epidermis in such abundance as to provide fully for tactile sensation in the skin leaves the exact function of these corpuscles in partial obscurity. There can be little doubt, however, as to their association with the perception of certain qualities of foreign bodies with which the skin may be brought into contact.

MERKEL'S TOUCH-CELLS are oval, nucleated bodies found in the lower animals, but also in man. They are supposed to be connected with the ultimate nerve-fibres. They resemble cells in a mitotic state, and are found in the upper part of the corium as well as the epidermis, and in regions in which the tactile corpuscles are few, as over the abdominal surface.

THE CORPUSCLES OF KRAUSE (BULB-CORPUSCLES: KOLBENKÖRPERCHEN) are rounded or oval-shaped bodies formed of a connective-tissue envelope and a non-nucleated bulb to which some delicate nerve-fibres penetrate. These bodies are found chiefly along the borders of the lips, over the glans penis, the clitoris, and the tongue.

PIGMENT.

The hue of the living integument is due in part to the degree of vascularity and distention of the vessels in the corium, and in part also to pigmentation of the epidermis. The coloring-matter of the skin in health is deposited chiefly in from one to four rows of cells in the lower stratum of the rete, the fine granules of pigment staining both the cell-body and the nucleus, the latter more vividly. The degree of vascularity of the skin is responsible for most of the flesh-tints, but the colors seen in the various races of men are wholly related to the character and quantity of pigment found in the rete. Rarely, pigment-cells are found in the corium in a state of health. This pigmentation depends upon a distinct and uniform coloration of the epithelia, and also upon minute granules of pigment entangled in the reticulum of living matter in the same part. Extreme variation in the distribution of pigment is noticeable both in health and in disease, and in individuals and races, being at times related to climatic and similar influences. This fact is well illustrated by the wide range between the flaxen-haired, pink-eyed albino and the blackest specimens of the negro, each, with small exception, being of African descent.

It has already been noted that in the colored races the pigment may stain the epithelial cells and their nuclei as high as the granular layer; and that to this layer only is due the characteristic color of the skin of the white races. Pigment is not normally found either in the horny

layer of the skin or in the subepithelial tissues. Waldeyer claims to have recognized it in normal connective tissue.

The source of the pigment in the skin has not been positively determined. It is believed by some to be carried by leucocytes from the corium beneath to the rete above; others have thought that the pigmented cells themselves were capable of migration. Yet others teach that the pigment is produced *de novo* within the rete-cells. It is most probable that the pigment is derived from the subepidermal structures, and is originally obtained from the blood itself.

The relation existing between the two sources of skin-coloration, viz., the blood and pigment, is interesting and suggestive. The unaided eye, looking at the outer surface of the body, makes little distinction between these two color-sources. It is certain that solar heat exerts a manifest influence upon both, and that in extravasations of blood into the substance of the skin every shade of color visible in the spectrum may at times be distinguished.

MUSCLES.

Striated Muscular Fibres extend from the subcutaneous tissue into the derma; in the case of man they are found chiefly upon the face and neck, where they are the analogues of more powerful skin-moving muscles possessed by several of the lower animals. Some, as those in the region of the face, serve to give expression to mental emotion by the production of facial movements.

Non-striated Muscular Fibres exist either as minute oblique fasciculi in connection with the glands and follicles of the skin; or as annular bands, such as those which surround the nipple; or as radiating and more or less parallel rods, such as antagonize the orbicularis in the eyelids.

The **Arrectores** (ERECTORES) **Pilorum** are muscles found usually in connection with the hair-follicles. They originate by minute multiple fasciculi from the papillary portion of the corium, and are inserted at several points into the outer layer of several adjacent hair-follicles, just above the plane of the apex of the hair-papilla. Their general direction is oblique, and their muscle-bundles are embraced and traversed by elastic fibres which form a dense network about them. Elastic threads also connect them intimately with the connective-tissue bundles of the corium, and serve as tendons at either extremity of each muscular fasciculus.

The muscles, by virtue of their oblique direction and mode of attachment, include in the angle subtended by their muscular fibres the sebaceous glands connected with the hair-follicles. It follows, therefore, that by their contraction they aid in the expulsion of the sebaceous secretion formed in the gland; but their intimate union with the elastic tissue, which is evenly and generally distributed throughout the framework of the corium, results in their discharge of a still more important function in connection with the regulation of the body-temperature, since by virtue of direct compression exerted upon the skin the blood may be driven from the surface in a centripetal direction

and its cooling in a great degree prevented, as in the well-known phenomena resulting in the production of the *cutis anserina*, or "goose-flesh." The reverse of this naturally follows when the muscles expand under the influence of external heat. The anatomical connections of the *arrectores pilorum* are such that their contraction serves to approximate several of the papillæ of the corium, including the hair-papilla. Thus, by their contraction the sebaceous secretion may be extruded, or, as is more particularly exhibited in the lower animals, such hairs as the bristles of the boar may be erected.

Muscular Membranes exist in the skin of the scrotum, over the penis, about the nipple, and elsewhere. They are simply layers of smooth muscular fibres, which suffice when contracting to move the portions of skin to which they are distributed.

HAIRS.

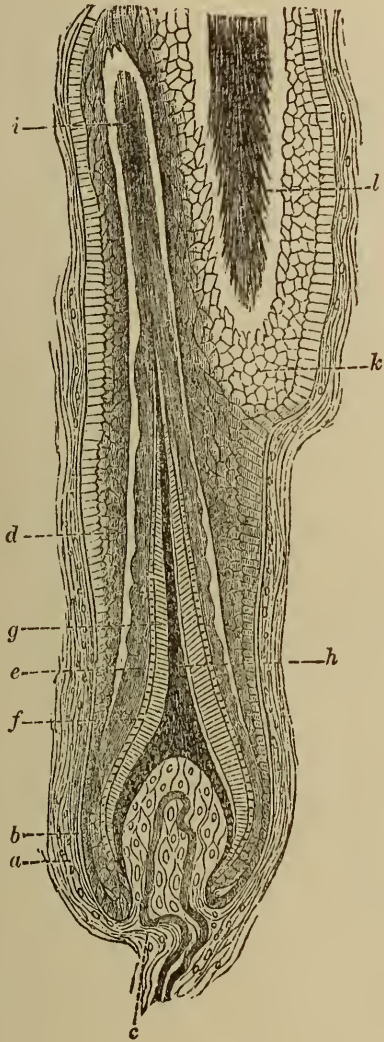
Hairs are cylindrical, elongated, and pointed epithelial filaments, derived from the epidermis, and obliquely implanted in depressions in the rete and corium, known as "hair-sacs," or "hair-follicles." They are found on all the superficies of the body except the palms and soles, the dorsum of the distal phalanges of the hands and feet, and the skin of the penis. Hairs occur in three tolerably distinct classes. These are: the fine, downy hairs, or lanugo, covering the face, the trunk, and the limbs; the long, soft hairs, such as those implanted upon the scalp, the pubes, and the axillæ; and the short hairs, including the soft varieties seen upon the brow and the stiff hairs of the eyelids.

The hairs are first developed in the third month of foetal life, when a short epithelial cone is formed, the base of which is gradually surrounded by connective-tissue cells, and finally indented from below by a rudimentary hair-papilla. Gradually the tip of the rudimentary hair perforates the primitive hair-cone and becomes a mature filament. At about the period of birth, sometimes earlier, occasionally later, the "bed-hairs," as they are called by Unna, are replaced by papillary hairs. The term *bed-hair* is applied to primary hairs unprovided with papillæ, and implanted in shallow follicles, from the sides of which productive epithelial offshoots have been sent out. Usually at the end of foetal life these bed-hairs have been for two months growing out of the hair-bed, or that part of the epithelium found in the central part of the hair-sac.

Hairs thus differ from nails not only in their anatomical features, but particularly as to their physiological reproduction. Hairs are periodically cast off and replaced by new filaments. The nails are shed and reformed only in disease; in health they enjoy a continuous growth during the life of the body. When a hair is about to be shed it separates from its papilla in the hair-follicle and rises in the latter till it reaches above the level of the papillary apex. It is for a time held in place with sufficient firmness by the prickle-layer only, thus forming the bed-hair already described. Later an epithelial bud is projected either into the vacant follicle below or into the corium on either side,

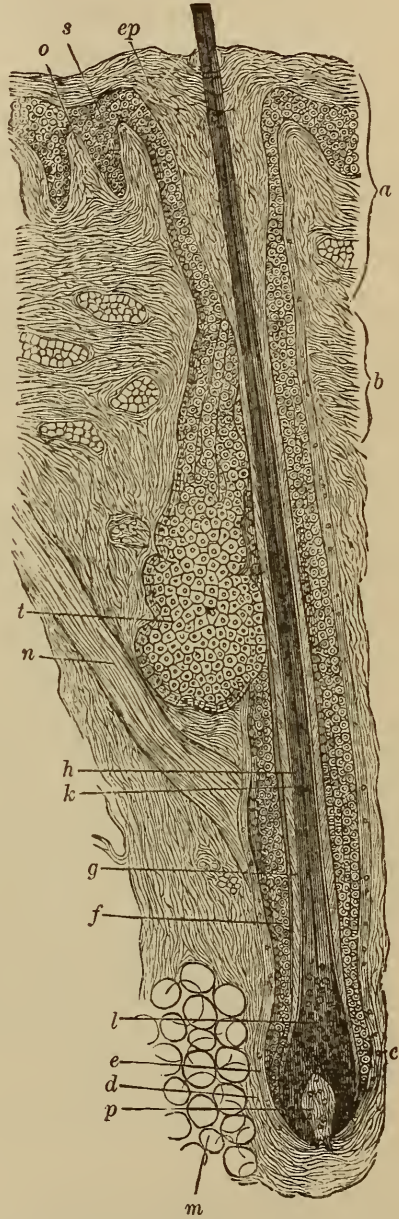
from which a new hair is formed, somewhat as the hair is formed in the primitive cone of foetal life. The subsequent growth outward of the new papillary hair separates the bed-hair from its connection with the prickly-layer, and this filament is shed.

FIG. 11.



Section of a hair-follicle during the formation of a new hair: *a*, external and middle root-sheaths; *b*, vitreous membrane; *c*, papilla with vascular loop; *d*, external root-sheath; *e*, internal root-sheath; *f*, cuticle of hair-follicle; *g*, cuticle of hair; *h*, *i*, young hair; *l*, bulb of old hair; *k*, debris of external root-sheath of hair recently expelled. (After EBNER.)

FIG. 12.



Hair-follicle in longitudinal section: *a*, mouth of follicle; *b*, neck; *c*, bulb; *d*, *e*, dermic coat; *f*, outer root-sheath; *g*, inner root-sheath; *h*, hair; *k*, its medulla; *l*, hair-knob; *m*, adipose tissue; *n*, hair-muscle; *o*, papilla of skin; *p*, papilla of hair; *s*, rete mucosum, continuous with outer root-sheath; *ep*, horny layer; *t*, sebaceous gland.

In studying the mature hairs the parts to be considered are the hair-follicle, and the bulb, shaft, and point of the hair.

Hair-follicle.—The hair-follicle is a sac-like pouch in the corium,

in which depression the hair-filament is implanted by its bulb and there firmly secured. The direction of this follicle is always at an oblique angle with the plane of the cutaneous surface upon which it opens, and thus is determined the set of the hairs, which is always fixed and at a similar angle. Viewed as a whole, the integument of the body over its entire area exhibits determinate whorls of both short and long hairs with definite centres, such as those which may be recognized at the vertex of the scalp, the centres of the lips, the umbilicus, etc. By this disposition the symmetrical appearance of the hairy parts is preserved, and, as a consequence of the same provision, physiological loss of the hair of the head is not productive of deformity, but rather adds dignity to the aspect of the elderly man.

The hair-follicle embraces the lower two-thirds of that portion of the hair which is imbedded in the skin, together with the envelopes of the latter, termed the *hair-sheaths*. Above the sebaceous glands the sheaths of the hair-follicle are lost in the papillary layer. The follicle is constituted of the connective tissue of the corium in three layers: an external longitudinal fibrous layer; a middle transverse layer; and an internal homogeneous or vitreous layer. At the base of the sac a fibrous pedicle may often be traced as low as the subcutaneous tissue.

If the hair-pouch were made artificially by thrusting into the skin from without inward a blunt-pointed pin before which the tissue was gradually pushed, it is evident that the external layer, the stratum corneum, of the epidermis would be the first depressed, and finally would form the inner surface of the pouch. This represents the inner root-sheath of the hair. Next to this the pin would carry before it the mucous layer of the epidermis, which then would form the outer root-sheath of the hair. Outside of both would lie the connective tissue of the corium.

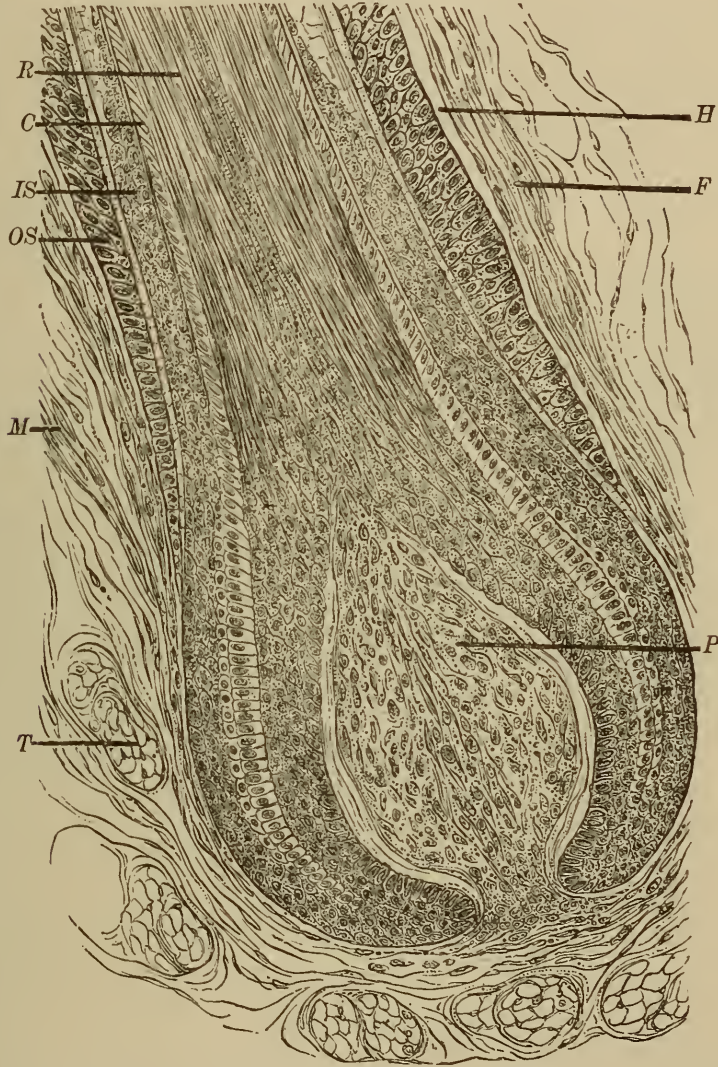
The **Outer Root-sheath**, or the prickle-layer of the hair-follicle, accompanies the involutions of the stratum corneum and the stratum granulosum from without into the funnel-shaped neck of the hair-pouch as far as the openings of the ducts of the sebaceous glands. There, abandoned by the two other layers of the epidermis, the root-sheath is thinned in proportion as the papilla, which rises from below and which it closely surrounds, increases in size. It thus forms a hollow cylinder traversed by the hair and its envelopes, with a relatively wide, external, funnel-shaped opening, only partially filled by the shaft of the hair, and a narrower opening within, which embraces the neck of the hair-papilla.

The **Inner Root-sheath**, or "matrix" of the root-sheath, is externally in relation with the outer root-sheath, or prickle-layer, of the hair-follicle. The protoplasm of the cells of which it is constituted contains keratohyalin in varying quantities, the amount being naturally greater in the cells lying nearest the hair-filament. That part of the sheath formerly termed "Henle's layer" is the more externally situated cellular envelope of this internal root-sheath, and is most conspicuous in that part of the hair-sac above the level of the papilla. That part of the sheath formerly called "Huxley's layer" is the more internally situated part of the same sheath, somewhat higher in the follicle. These

are not distinctly different structures, but only a single structure in different situations. Whether termed the internal root-sheath or the matrix of the root-sheath, it springs from the neck of the papilla, and rises as high as the neck of the follicle. It contains keratohyalin, which is actively concerned in the cornification of the hair-tissue.

Between this internal root-sheath and the cells constituting the cortex of the hair there is found, according to Unna, the common matrix

FIG. 13.



Lower portion of hair-pouch from the lip of a kitten: *F*, follicle; *T*, transverse section of connective-tissue bundles of derma; *M*, arrector pili muscle; *IS*, inner root-sheath; *OS*, outer root-sheath; *P*, papilla; *C*, cuticle; *R*, root of hair; *H*, hyaline, or so-called "structureless," membrane. Magnified 500 diameters. (After HEITZMANN.)

of the cuticulæ, forming respectively the cuticle of the root-sheath and the cuticle of the hair. The former is composed of cells with their long axes parallel with the circumference of the hair, while those forming the cuticle of the hair are arranged perpendicularly to the surface. These cuticulæ are securely locked together by projection of their cell-edges, while united in the hair-follicle.

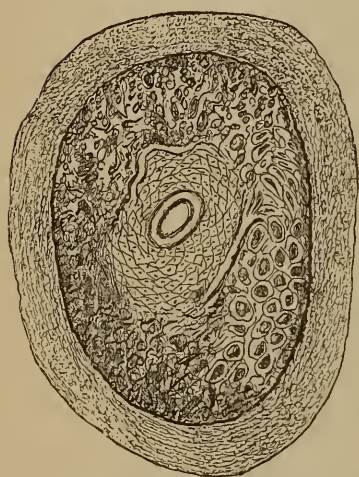
The **Bulb** (or **Root**) is that portion of the hair imbedded in the

skin, toward which the shaft of the hair gradually increases in thickness as it descends. The bulb is embraced by the hair-follicle, though its root-sheaths are interposed and implanted below at the base of the sac upon a nipple-shaped prolongation of the corium that may be regarded as analogous to the vascular papillæ of the papillary layer of the corium.

The bulb of the hair embraces the papilla, and is constituted of pigmented cells externally, forming what is called the "cortex" or cortical portion. This is the larger of the two structures of which the hair is composed, and its cells become vertically elongated and narrow as they are pushed outward in the process of growth.

The **Shaft of the Hair** is that portion which extends from the exit of the hair at the surface of the skin to its extremity; the latter, when uncut, always tapers to a perfectly acuminate point, as illustrated by the uncut hairs of the eyelids and those of the lower animals. The hair-shaft is either straight, curled, wavy, or alternately varied in diameter. A transverse section presenting an ovoid or ellipsoidal outline suggests an irregularly compressed circle. The degree of this flattening varies in different races, and is the cause of variability with respect to straightness or curliness. As hairs are to a marked degree hygroscopic, and not only absorb but can be deprived of a portion of their water, these states of waviness are subject to variation according to the aqueous condition of the media by which an individual is surrounded.

FIG. 14.



Transverse section of hair and follicle.

The color of the hair is dependent upon the pigment it contains, the color of the hair-cells, and the quantity of air contained in the medulla. Variation in these three factors produces the wide range between a snowy whiteness and an ebony black.

The coloring-matter of the hair is thus stored in both its horny and its medullary portions, and is distinct both within and between the epithelial elements of which the hair is composed. This pigmentation corresponds in great part with the amount of pigment distributed to other parts of the integument, and sustains a close relation to the general nutrition of the body. Its subjection to the influence of the trophic nerves is well demonstrated by the phenomena of rapid blanching of the hairs. Excessive sweating, whether physiological or induced by the action of pilocarpine, has also a distinct influence upon the shade of color of hair.

The membrane which invests the shaft of the hair is the cuticle, composed of numerous flattened plates, non-nucleated and non-pigmented, regularly overlaid so as to resemble closely adherent fish-scales when viewed under the microscope on the flat side, and the overlapping tiles of the roof of a house when seen on the edge.

The **Cortex** of the hair, constituting the greater part of its bulk, is

composed of flat, nucleated, pigmented, fusiform epidermal cells. The strength, elasticity, and extensibility of the hair are chiefly due to the cortical substance, and in particular to the firmness with which these epidermal cells are attached to one another.

The **Medulla** of the hair is found best developed in the short, strong hairs of the beard and eyelashes, being wanting in the lanugo-hairs. It consists of a loosely packed mass of epidermal elements with interspersed air-spaces, differing in shape, developed in the centre of the axis of the shaft. This part of the hair contains also the pigment and fatty matters, which are here arranged as in the rete of the epidermis. Seen under the microscope, the medulla appears as a continuous or interrupted longitudinal band extending from the bulb, or the part implanted in the follicle, to the extremity, or point, of the hair. The purpose of this difference in the constitution of the cortex and medulla of the hair is doubtless to insure, on well-known mechanical principles, a maximum of strength, extensibility, and elasticity, with a minimum of volume.

SEBACEOUS GLANDS.

The sebaceous, or sebiparous, glands are pyriform bodies, usually racemose in development, situated in the corium, never in the subcutaneous tissue; they furnish a more or less consistent and fatty secretion destined to anoint the skin and hairs. They can usually be distinguished as of three classes, though only two of these classes include glands which are associated with hairs in the embryo.

The first class includes the sebaceous glands, which, strictly speaking, are appendages of the hairs and hair-follicles. They are developed early in foetal life from minute, lateral, bud-like prolongations from the outer root-sheath of the hair. From two to six of these prolongations spring from the prickle-layer of the hair-follicle, and the prickle-cells in the axis of each bud speedily undergo fatty metamorphosis. In the mature gland each acinus is formed of a membrana propria supporting layers of nucleated cuboidal epithelia undergoing fatty metamorphosis. Gradually the fatty cells are pushed outward toward the duct of the gland, where, sooner or later, their rupture releases numerous drops of fat (sebum) just where the hair emerges from the closely applied follicle below to the funnel-shaped mouth of the hair-pouch above. Externally each gland is provided with a layer of connective tissue. Sebaceous follicles are found in connection with the long, soft hairs, as those of the scalp and the axillæ, several being grouped around a single hair-sac.

The second class includes the large and complex glandular structures to which the lanugo-, or rudimentary, hairs seem accessory, the orifices of their respective ducts opening directly upon the cutaneous surface. These glands are chiefly found upon the glabrous portions of the skin, as upon the face in both sexes and upon portions of the trunk and extremities.

The third class includes those sebaceous glands, much the smallest in number, opening directly upon the surface and unconnected with hairs or hair-follicles. Such are the glandulæ odoriferæ of the male

and female genitalia, and those existing about the lips and in the areola of the nipple. These glands might be designated as “glands of the mucous orifices.”

The **MEIBOMIAN** and **TYSONIAN GLANDS** are of the largest order of sebaceous glands. The former exist within the free border of the eyelids; the latter, upon the glans penis and the inner face of the prepuce. They are unconnected with hairs, and in this respect differ from other types of sebaceous glands.

FIG. 15.

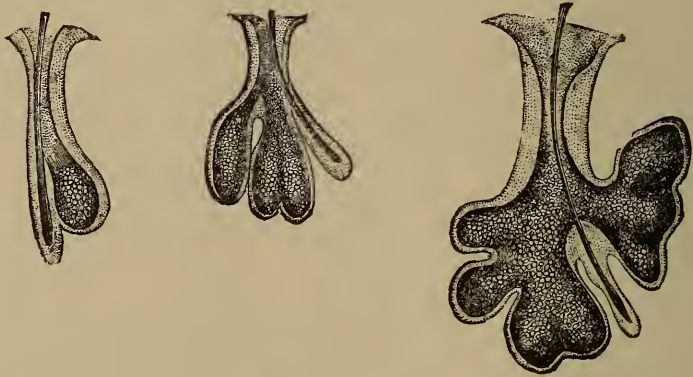
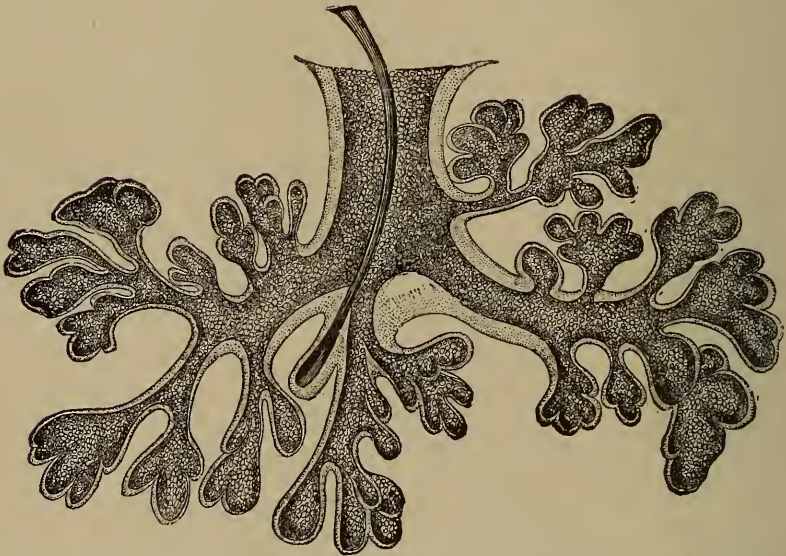


FIG. 16.



Sebaceous glands of the second class, from the alæ of the nose. (After **SAPPEY**.)

The **GLANDULÆ CERUMINOSÆ** are situated in the sebaceous tissue of the meatus of the ear, and contribute to the waxy secretions there furnished. The “glands of Moll” found in the eyelids are to be classed with the sweat-glands.

The **Sebaceous Secretion** contains, chemically, water, palmitic and oleic acids, palmitin and olein soaps, and the saline constituents of the other organic animal compounds, chlorides and phosphates of the alkalis and earths. The extrusion of the secreted sebum from the ducts of these glands is greatly favored by the action of the *arrectores pilorum* muscles, by the contractions of which the gland is to a degree compressed. This is the reverse of what occurs in the coil-glands, the secretion of which is impeded by the action of these same muscles.

COIL-GLANDS.

The coil-glands (SWEAT or SUDORIPAROUS GLANDS, GLANDULÆ GLOMIFORMES), found within the skin of all regions of the body, are globular coils situated in the subcutaneous tissue and in the deeper portions of the corium. They appear first in the fifth month of foetal life as buds projected downward from the prickle-layer of the epidermis. These projections always form between the papillæ of the corium, and spring from the rete-pegs between these papillæ. Long, thin cones of epithelium thus gradually traverse the corium, and become slightly bulbous at the lower extremity to form later the coil. The lumen, when formed, extends rapidly to the epidermis, and after this is reached there is formed from within outward an opening, which becomes the sweat-pore.

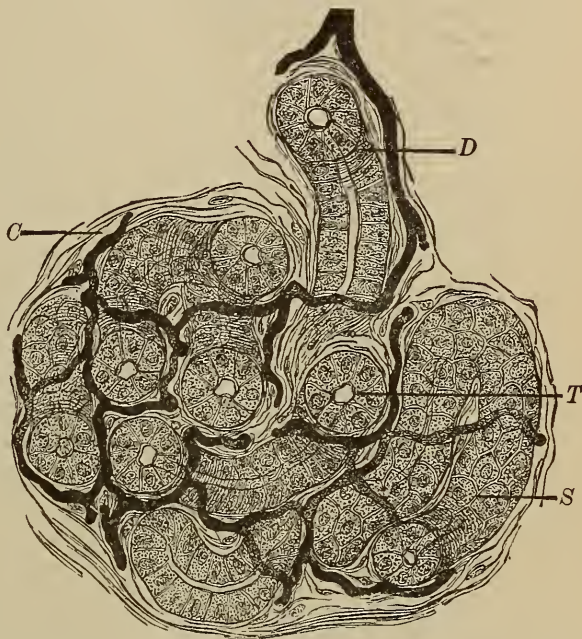
After birth these glands are found in all parts of the body, but in certain regions, such as the axillæ,

the groins, the palms, the soles, and about the anus, the coil-glands are multiple, of unusual size, and often peculiarly arranged. They are specially numerous in the palms and soles, where, according to Krause, there are between two and three thousand to the square inch.

The **Coil** is a convoluted tube, of fairly uniform lumen, terminating in a cæcal pouch, lined with nucleated cubical epithelia in a single layer of granular appearance, which are the secretory cells of the gland. Outside of the tube are smooth muscular fibres running parallel with or in a spiral direction about the coil. Surrounding both muscle-bundles and epithelium is a connective-tissue membrane. The glomerulus, or coil, is globular in outline and reddish yellow in color. In the larger glands irregular dilatations and constrictions of the tube are conspicuous.

The **Excretory Duct** of the coil-gland passes from the glomerulus below to the epidermis above in a straight or a spiral course. It is lined with a delicate hyaline cuticle (discovered by Heynold), beneath which is a double layer of cuboidal epithelium. Externally is a membrana propria, unprovided with muscular fibres. Its outermost sheath is the usual connective-tissue layer. When the duct reaches the borderline of the epidermis its inner cuticle and external connective-tissue

FIG. 17.

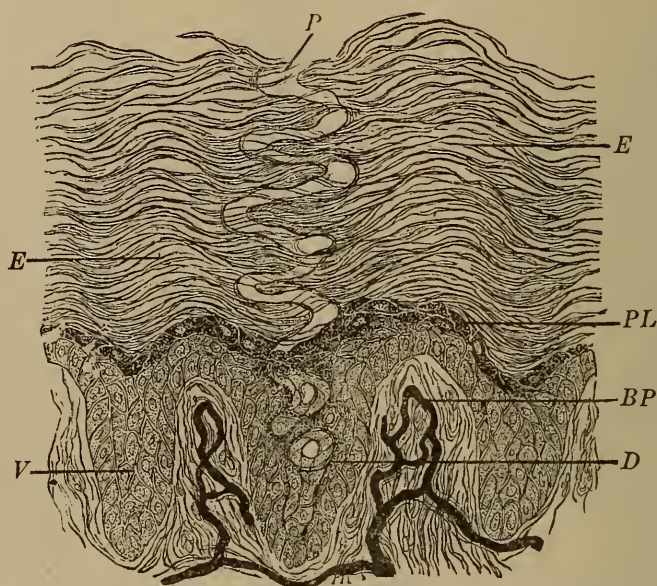


Coil of a sweat-gland: *S*, tubule lined with cuboidal epithelia; *T*, central calibre of the tubule; *D*, beginning of the duct; *C*, connective tissue with injected blood-vessels. Magnified 500 diameters. (After HEITZMANN.)

sheath both are lost ; here it becomes a sweat-pore. It opens at times within a hair-pouch.

The **Sweat-pore** is a continuation of the excretory duct of the coil-gland after the loss of its cuticle and connective-tissue sheath. It is the loss of these sheaths and the consequent intimate relation of the canal to the epithelia of the epidermis that furnish the special basis for this distinction. The sweat-pore is merely a wall-less canal or channel, spirally directed or running a straight course from the duct of the coil-gland below to the outermost stratum of the epidermis above. It

FIG. 18.



Sweat-pore traversing the epithelial layers of the skin: *BP*, papilla with injected blood-vessels; *V*, valley between two papillæ; *D*, duct in the rete mucosum; *E*, *E*, epidermal layer; *PL*, coarsely granular epithelia, deeply stained with carmine; *P*, duct with corkscrew-windings in the epidermal layer. Magnified 200 diameters. (After HEITZMANN.)

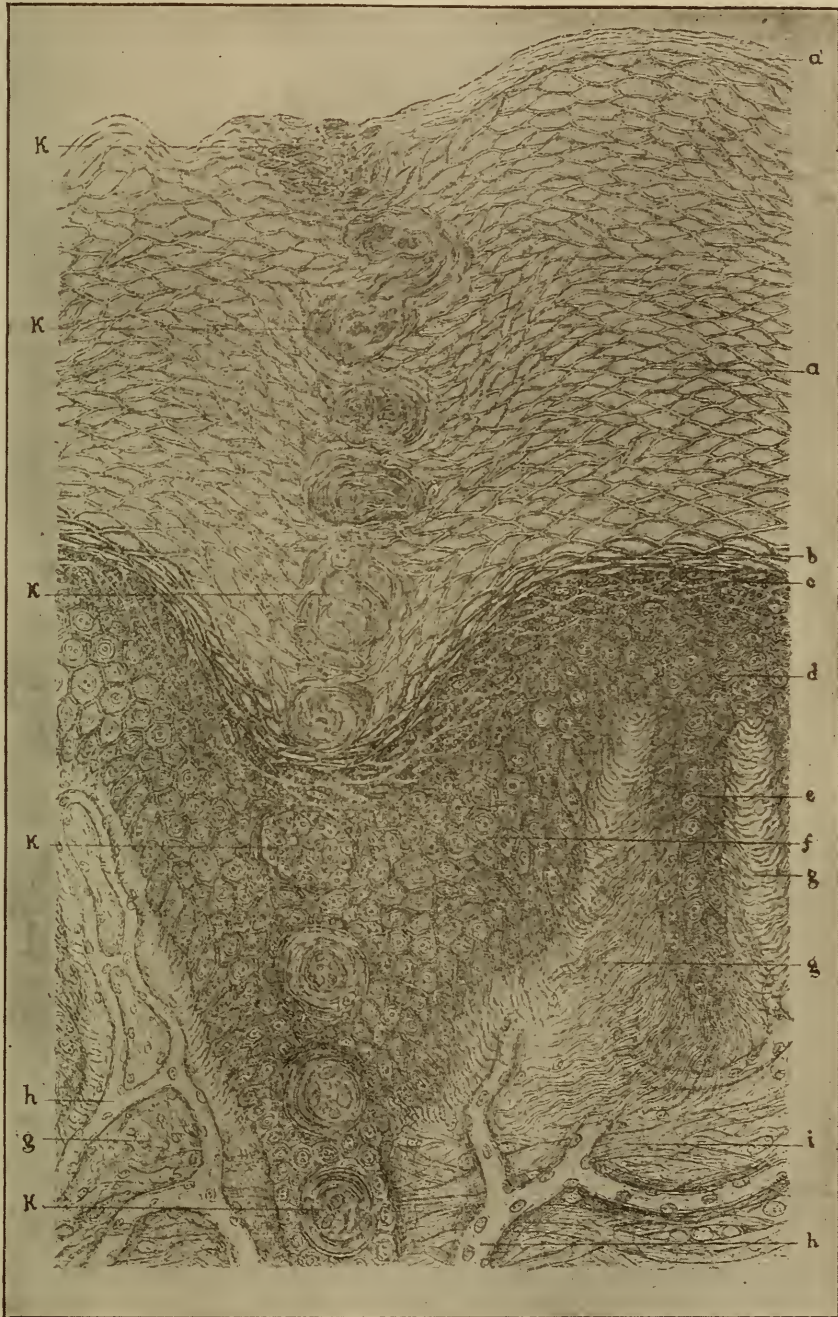
has no other wall than that formed by the cells of the prickly-layer below and of the other layers of the epidermis, which successively surround this canal, narrow below and funnel-shaped above. Eleïdin-granules are found in the cells which border the sweat-pore at a somewhat lower plane than the stratum granulosum. Hence the lumen of the sweat-pore, if such a term be permissible, is in free communication with the juice-spaces of the epidermis.

The **Secretion** of the coil-glands consists largely of globules of fat and granules of pigment. The function of the coil-glands, therefore, is plainly the lubrication of the skin with unguent, a task performed only in small part by the sebaceous glands, and by them chiefly for the pilary covering of the body. The palms of the hands and the soles of the feet are thus lubricated with fat by the coil-glands.

The total number of coil-glands in the body is estimated to be between two and three millions, and the total length of the uncoiled glands about eight miles. These figures serve to give an approximate idea of their great physiological importance, and of the extent to which violation of the rules of hygiene possesses interest from a pathological point of view.

The function of the sweat-pores which communicate directly with the excretory ducts of the coil-glands is distinct from that of the coil-

FIG. 19.



Section of the skin from the palm of the hand (hardened in Moeller's fluid and treated with glacial acetic acid), magnified 300 diameters, showing epidermis and pars papillaris of the corium traversed by the excretory duct of a coil-gland terminating in a sweat-pore: *a*, stratum corneum: *a'*, its superficial layer, the cells in the upper and lower layers somewhat larger than those situated between the two; *b*, stratum lucidum; *c*, stratum granulosum; *d*, stratum mucosum; *e*, rete-pegs; *f*, interpapillary process of rete meeting duct of coil-gland; *g*, *g*, papillae embraced by long prickles extending from lower palisade-layer of the rete; *h*, blood-vessels of papillae; *i*, bundles of connective-tissue fibres of pars papillaris; *k*, section of spiral duct of coil-gland and sweat-pore.

glands, since it provides for the transmission outward of the watery fluids of the skin. The channel described as the sweat-pore is in ample

and free communication with the intercellular spaces of the epidermis; and this anatomical peculiarity provides fully for the needs of evaporation at the surface of the body.

The SWEAT excreted by the body differs under varying conditions of temperature, humidity of the air, and the amount and character of the articles ingested by the individual, either as food, drink, or medication. Nearly 98 per cent. of the secretion is pure water, the remaining proportions representing the saline constituents of the other fluids furnished by the animal in life. In all chemical analyses of the sweat a source of error lies in the difficulty of securing the fluid secretion unmingled with that produced by the sebaceous glands; and the same, it may be said in passing, is true of the chemical analysis of the sebum. According to Dühring, potassium iodide, benzoïn, and succinic and tartaric acids may be excreted with the perspiration.

Unna, following in the lines indicated by Meissner, asserts that the coil-glands actually produce the subcutaneous fat-cushion; and the anatomical basis of such a statement is clear. The coil-glands and the fat-cushion appear at the same period of fœtal life and develop in the same proportions. At birth the clusters of fat are most conspicuous where the coil-glands are most numerous. In the adult the greater number of coil-glands are subcutaneous in situation and are closely surrounded by fat-globules; while those glands which do not descend below the corium, though not thus surrounded, are regularly met by columns of fat advancing toward them from below. The credit of discovering and naming these FAT-COLUMNS belongs to Warren, whose studies were principally directed to the anatomy of the thick cutis vera.¹ The back and shoulders of a vigorous adult furnish an integument much thicker than the hide of many pachydermatous animals. The papillæ are imperfectly formed and are represented by an undulating line. The follicles of the lanugo-hairs penetrate only the superficial layers of the cutis. From the bases of the hair-follicles nearly vertical clefts, or slender, columnar-shaped spaces, extend obliquely to the panniculus adiposus. These shafts are named "fat-columns" or "fat-canals," as they are entirely occupied by adipose tissue. (See Figs. 3 and 4.)

The fat-columns are four millimetres in length, and are slightly wider than the hair-follicles above. Their long axes form a slight angle with that of the follicle, but they are nearly parallel with that of the erector pili muscle. The horizontal prolongations are given off on either side of the middle of this axis, partly fat-filled. Near this point the coil of a sweat-gland is seen to be held in place by a few delicate fibres. The duct of the gland runs to the top of this space, whence it may be traced to the side of the hair-follicle. The connective-tissue fibres seem to terminate abruptly at the edges of these columns. The cleft slightly widens below, and on the side toward which its axis leans the fibers of connective tissue form a bundle penetrating below to the subcutaneous fat. The erector pili muscle is inserted partly into the base of the follicle and partly into the apex of the fat-canal. These columns correspond in number with that of the hairs. The blood-

¹ Satterthwaite's Manual of Histology, p. 420. New York, 1881.

vessels they contain, which spring from the subcutaneous plexus, bifurcate at the lateral clefts. Unna demonstrates that the fat-columns invariably advance toward the coil-glands either singly or in groups, and that the connection of the fat-columns with the hair-follicles is a mere incident of that advance.

The alternation of muscular fibres with the secretory cells of the ducts of the coil-glands is a provision for the extrusion of the gland-secretion onward. The same anatomical arrangement permits free communication between the epithelia and the lymph-spaces which reach into the connective-tissue sheath of the gland. As a result, the lymph flows freely among the secreting elements of the gland and its duct.

FIG. 20.



Thin section of the skin of a finger, removed at the site of a sweat-pore. Magnified 150 diameters. The cavities or spaces seen in the epidermis are, some, apparently uncolored; others are blackened by the action of osmic acid upon fat originally contained in either cells or spaces between the latter. The effect is due to excretion of fat by the coil-glands, and the condition shown is not exhibited in all sections of the skin made at the same level. It is probably transitory, and is most apparent when the skin is macerated by sweat.

This lymph, loaded with fat, streams away from the coils, and before it reaches the lymphatic trunks its fat-globules are filtered away in the subcutaneous tissue.

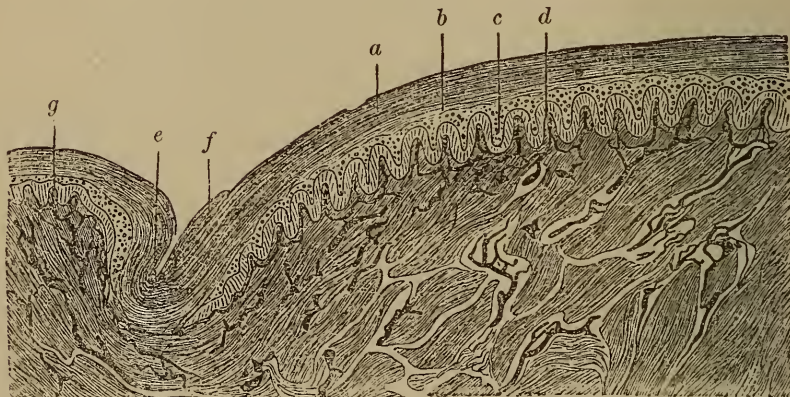
Odorous Emanations from the Skin.—The skin of the human body in health is the constant source of odorous emanations, which, in pathological conditions, may greatly be increased or otherwise changed. The nature and exact sources of these emanations are as yet imperfectly understood. Were they exclusively volatile, gaseous, or vaporous, even though capable of condensation upon external bodies, this would scarcely explain the well-known fact that some of the lower animals are capable of tracing the track of a human being for miles over a wind-swept path until the soil pressed by the foot is covered with water. There is strong reason to believe that these emanations are vehicles by which certain contagious and infectious diseases are transmitted from one individual to another. They at times contain living matter derived from the protoplasm of the body, and are capable of conveying bacteria in compact masses and in enormous quantities through the atmosphere when it is agitated by a current of air. Some of the schizomycetes

weigh but one-ten-billionth of a milligramme, and are transported through space in the most attenuated of media. These emanations are properly regarded as having their origin in the secreting system of the skin, but in what proportion the several secreting glands participate in their production it is difficult to establish. The sweat at times, even to human nostrils, exhales a distinct odor, though, as before indicated, to what extent this is due to the admixture of sweat with sebaceous material it is difficult to determine. Peculiarly fetid and disgusting odors occasionally originate in chemically altered sebum exuded in regions of the body where the influence of the sweat-secretion must be, from the locality under examination, partly eliminated.

NAILS.

Nails are dense, elastic, and translucent concavo-convex plates, or shells, of horny tissue, placed upon the dorsum of the terminal extremities of the distal phalanges of the fingers and toes. They result from an oblique invagination of embryonal epidermis, with modification of the keratinization-process at the level of the invagination (Darier). Each nail has a free border at the distal portion of the pulp of the digit, with sides and proximal borders let into distinct furrows of the skin. The convex surface of the nail is exposed; the concave, regarding the phalanx, is implanted upon the nail-bed beneath.

FIG. 21.



Vertical section of one-half of nail and matrix: *a*, nail-substance; *b*, horny layer; *c*, mucous layer; *d*, papillæ of corium; *e*, nail-furrow destitute of papillæ; *f*, horny layer of the ungual furrow rising above the nail; *g*, papillæ of skin of dorsal surface of the finger.

In the embryo the first change looking to the formation of a nail consists in a peculiar smoothness and brilliancy of the epidermis covering the dorsum of the distal phalanges. Later, an epithelial ridge or line, with a groove in front of it, traverses the tip of the finger. Thus, three regions are defined: the region behind the ridge, the nail-wall; that in the groove, the nail-bed; and that in front of the groove, the pulp of the last phalanx of the digit. A collection of large prickle-cells at the orifice of the nail-fold soon furnishes the first trace of the rudimentary nail. Mature nail-cells finally push forward between the prickle- and horny layers of the nail-bed, which, by fan-shaped bundles

of follicles, is firmly united to the periosteum of the phalanx. Lastly, a thin plate of horny material with a free edge is visible externally in the fingers and toes of the newborn child.

In the adult, what is termed the **Matrix** of the nail is the tissue from which springs the horny plate. The cells of the matrix are cylindrical below and flattened superficially, with a fibrillary structure, and, instead of a stratum granulosum, are supplied with a layer of cells of brownish color charged with a keratogenous substance. The matrix is separated into, first, a posterior part, filled with from three to six rows of papillæ; and next, in advance of this, a lenticular space with curved borders, the anterior limit of which corresponds with the anterior border of the lunula. The area included in these two divisions is provided with papillæ grouped in symmetrically converging ridges, decreasing in size as they pass forward. This forms the matrix of the nail. Further forward, the **Nail-bed** proper—in other words, the tissue that supports, rather than produces, the horny plate—is composed of higher ridges of papillæ, the grooves and summits of which are covered with prickle-cells, and the height of which is uniformly maintained as they stretch forward toward the pulp of the finger.

The **Nail-fold**, crescentic in shape, clasps the nail posteriorly and laterally. It is formed of connective tissue, the bundles of which are interpenetrated by numerous coil-glands and fat-columns. The epidermis beneath the nail exhibits prickle-, granular, and horny layers. As the nail is gradually liberated from its bed both at the sides and point the cornification of the horny layer becomes more complete, so that finally, as the nail-plate is pushed forward, it no longer rides over the cells of the rete, but over a completely cornified tissue.

If the pulp of a nail-bearing phalanx be pressed with moderate force against any firm object, the naked eye can detect upon the surface of the nail, just behind its free border, a yellowish-white band, convex anteriorly and somewhat increasing in width laterally. This line is also visible when no pressure is exerted upon the digit, its width varying under the conditions described. This border represents the space in which the three layers of the epidermis from the skin of the point of the finger, viz., the horny, the granular, and the prickle-layer, successively come in contact with the under surface of the nail.

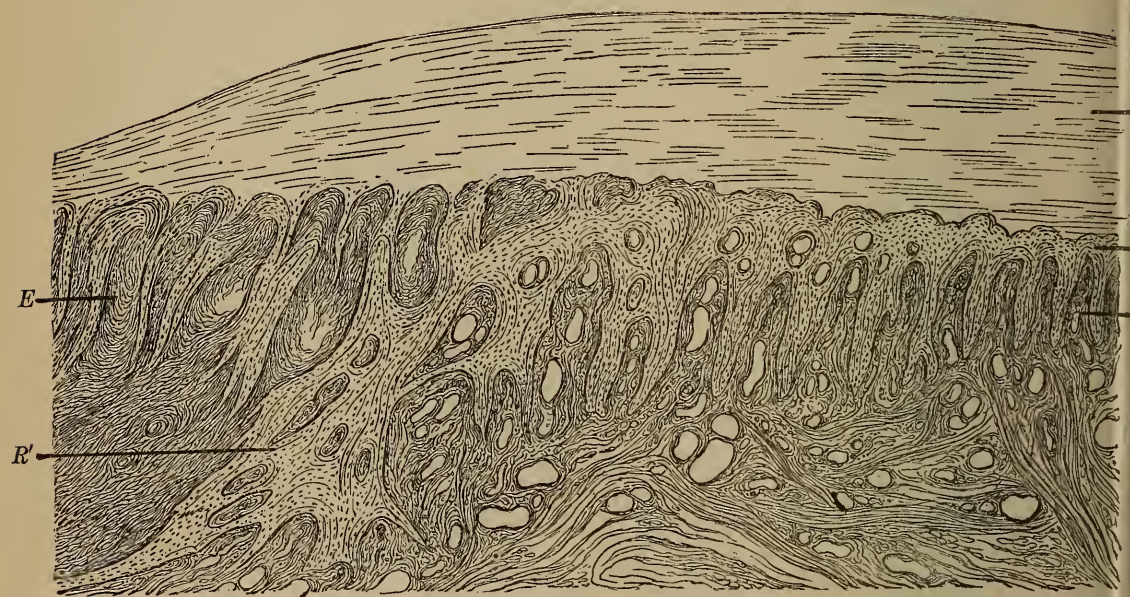
The **Lunula** is the relatively light-colored space extending from the middle part of the nail-fold posteriorly to its well-defined convex border in front. After artificial removal of the nail-fold the lunula is seen to extend to the posterior and enclosed border of the nail-plate. It, therefore, represents that part of the matrix of the nail not concealed by the nail-fold. Its color is not due to absence of vascularity, but is owing solely to the relative opacity of the keratogenous cells which are concerned in the production of the horny threads that form the nail.

The **Nail** (TRUE NAIL, or NAIL-PLATE) originates only from the floor of the nail-fold as far forward as the anterior edge of the lunula. As to its formation, it may, therefore, be imagined as springing from its matrix vertically in the form of an involuted, shield-shaped plate, its convexity regarding the proximal phalanx. It may then be viewed as pressed downward over its nail-bed in front, with partially unfolded

edges enwrapped by the epidermis of the sides, the narrowed point of the shield, elongated when untrimmed, projecting at some distance beyond the tip of the finger.

With this conception it is easy to understand that the nail is constituted of horny filaments, or coherent strata of cornified cells, passing from the matrix or floor of the nail-fold. The upper surface of the nail grows, therefore, from the bottom of the nail-fold; the under surface, from the lunula; and the intermediate layers proportionately from the parts between, that interlock with corresponding grooves on the upper face of the bed.

FIG. 22.



Implantation of a nail at its border: *P*, papillæ decreasing in size toward the middle line; *R*, rete mucosum, which broadens toward the border of the nail, and forms irregular prolongations; *R'*, *E*, epidermal layer; *N*, plate of the nail. Magnified 500 diameters. (After HEITZMANN.)

Unlike the hairs, the growth of the nails, when not modified by traumatism or disease, is continuous and without definite limit during the life of the individual. The growth is from the matrix to the free border, more actively in the young than in the old, and in summer than in winter. From one hundred to one hundred and sixty days are required for reproduction of an entire finger-nail, and about three times that period for the nail of a toe. The uncut nail is produced in the form of an elongated, pointed, claw-like talon.

Nails are extremely sensitive to even moderate perversion of systemic nutrition; and either in loss of brilliancy and polish or in deeper structural alterations betray evidences of changes in the health of the individual.

II. GENERAL SYMPTOMATOLOGY.

IN cutaneous, as in other, diseases the clinical signs or symptoms of a morbid process are those by which a disease is recognized alike by the patient and the physician. These signs and symptoms are divided into subjective and objective: the former are those appreciated by the patient alone in consequence of his sensations; the latter are those detected by the eye and the touch of another who undertakes the investigation of the disease. It should be remembered, however—and this is a matter of some importance in this connection—that there are manifested to the eye and touch of the patient many objective signs which are liable to be interpreted or misinterpreted by him, with consequences not to be ignored.

SUBJECTIVE SYMPTOMS.

The purely subjective symptoms of a disease of the skin are those manifested to the patient by sensations other than those connected with vision and his own sense of touch. They include sensations of itching, smarting, tickling, pricking, and burning; sensations as of increased or diminished susceptibility to the contact of foreign bodies; of increased or diminished temperature; pain in various grades of severity; and disordered sensations, such as those suggesting the crawling of insects over the part, the passing of currents of hot or cold vapors or liquids, and the compression of portions of the skin as by cords, bands, or closely fitting plates. The character of the subjective sensations experienced by a patient often proves an aid to the physician in recognizing the nature, not merely of a present disease, but also of one which has preceded. Thus, the sensation produced by an attack of erysipelas is rarely an itching, while the latter is highly characteristic of eczema and scabies; the pain of zoster and the tingling of urticaria being distinctly different, not only from each other, but also from the subjective symptoms named above.

OBJECTIVE SYMPTOMS.

The study of the objective symptoms of a cutaneous disease is of paramount importance. In no respect does the skilled physician so distinguish himself from one who is unskilled as in ability to recognize the typical or atypical objective features presented in diseases of the skin. This study is one which no diagnostician can safely neglect, and its rewards are precious in every department of medical science. These symptoms are spread before the eye, and their legibility increases with every hour of careful observation.

These signs of skin-disease—or, more literally, skin-injury—are called “lesions” (efflorescences, elements of an eruption), and it is usual to classify them as primary and secondary. Such division, however, is open to criticism, since, in point of time merely, some of the so-called “primary lesions” of the skin become in turn secondary and even tertiary. Thus, a papule which might at one time be called “primary,” may be transformed wholly or in part into a vesicle, which thus becomes a secondary lesion, and such vesicle again, in the evolution of a disease, may become a tertiary pustule, and the latter finally may result in a quaternary crust. In the following pages these symptoms of skin disease are distinguished as elementary and consecutive.

Elementary Lesions.—In describing the average size of cutaneous lesions it is less convenient to state their measurement in fractions of a line or of a millimetre than to convey an approximate idea by a comparison with familiar objects of relatively fixed dimensions. The objects usually selected for this purpose, beginning with the smallest, are seeds of the poppy, mustard, and rape; the coffee-bean; the pea; the bean; the cherry; the finger-nail; the chestnut; the horse-chestnut; the egg of the hen and of the goose; the orange. To these may also be added the point and head of a pin. The student will find it useful to familiarize himself with the size of the small seeds mentioned, that their names may at once suggest to him the relative size of the lesions with which they are compared.

MACULÆ (SPOTS, OR STAINS) ARE GENERALLY CIRCUMSCRIBED ALTERATIONS IN THE COLOR OF THE INTEGUMENT, DIFFERING IN SIZE, SHAPE, HUE, AND DURATION OF THE DYSCROMIA, AND UNACCOMPANIED BY ELEVATION OR DEPRESSION OF THE SKIN-SURFACE.

Maculæ may be due to arterial or venous hyperæmia, to the escape of the coloring-matters of the blood into the skin, to acquired and congenital telangiectasis, and to pigment-anomalies. Examples of maculæ are to be found in the exanthematous rashes (measles); in localized hyperæmia of the capillary plexuses of the corium, disappearing in various degrees according to the pressure exerted on the part (rosacea); in visible acquired development of blood-vessels in the skin (telangiectasis); in congenital vascularization of the surface (nævi); in variously colored blood-extravasations and stases (purpura); in stains produced by contact with dyes (hand-workers in anilin); and in pigmentary changes such as those produced by solar heat (freckles) or by leprosy.

Extensive non-circumscribed changes in the skin-color are seen in the course of several general disturbances of the economy, as in yellow fever, cancer, chlorosis, albinism, Addison's disease, argyria, and icterus.

Spots of various color and device are also produced by the intentional or accidental introduction of pigmented particles beneath the epidermis, as by the process of tattooing, the explosion of gunpowder, etc.

Maculæ exhibit a wide variation in color from a rosy pink to a chocolate brown or even a black. This difference has suggested the

employment of such descriptive terms as roseola, erythema, and purpura, which, unfortunately, serve to distinguish both the features of diseases and the diseases themselves.

A macula which encircles another lesion, as, for example, the halo around a vaccine vesicle, is called an "areola." Linear hemorrhagic streaks are called "vibices"; punctate and larger extravasations of blood are termed "petechiæ" and "ecchymoses."

PAPULÆ (PAPULES) ARE SOLID OR COMPRESSIBLE, EPHEMERAL OR PERSISTENT, CIRCUMSCRIBED PROJECTIONS FROM THE SURFACE OF THE SKIN, VARYING IN SIZE FROM THAT OF A POPPY-SEED TO THAT OF A COFFEE-BEAN.

These exceedingly common skin-symptoms vary greatly in their shape, color, location, career, and significance. Thus, they may be flattened at the apex, acuminate or pointed, conical, rounded, or depressed at the summit to form an umbilication; they may be pale, rosy, dark or lurid red, purplish, or even blackish; they may develop in transitory or persistent processes; they may be transformed into lesions containing fluids; may desiccate and furnish scales either at apex or base; may degenerate into ulcers; or may enlarge into tubercles or tumors; may be scratched, torn, or rubbed so as to lose their typical appearance; may come and go; may be sensitive to sudden changes in the blood-current, and yet be persistent.

The mixed forms described above are generally named vesico-papular or papulo-vesicular, papulo-squamous, papulo-pustular lesions, etc.

Lesions which simulate the papule, and which, though described under that title, really belong to another category, are the small, semi-solid elevations of the surface that form at the orifices of the ducts of the cutaneous glands and follicles. Thus, they may consist of little heaps of epidermis about the hair-follicles (*lichen pilaris*, *keratosis pilaris*), or of inspissated sebum collected in one of or in all the acini of the sebaceous glands (*comedo*).

The concomitants of an eruption of papular type also vary. Thus, there may be a febrile process, or extensive infiltration of the skin about and beneath the papules (*prurigo*), or itching of the most intolerable character (*eczema papulosum*), or production of trifling sensations of annoyance, as a slight burning without other subjective symptoms (*acne*, *lichen planus*).

Papules transformed into moist lesions become covered with a crust. Papules scratched or torn by the finger-nails usually betray the fact in the minute and flat blood-scales dried upon their surface. Papules which ulcerate may be followed by scars, and those which have undergone the process of involution may be followed by macular *sequelæ*.

POMPHI (URTICÆ, WHEELS) ARE MORE OR LESS TRANSITORY, ROSY RED AND WHITISH, IRREGULAR SHAPED AND SIZED ELEVATIONS OF THE SURFACE OF THE SKIN, PRODUCED BY BLOOD-STASIS IN SPASM OF THE VESSELS, ACCOMPANIED BY A TINGLING OR A PRICKLING SENSATION, AND CHARACTERIZED BY RAPIDITY OF EVOLUTION AND FREQUENCY OF RECURRENCE.

The typical wheal is seen in the disease known as "nettle-rash" (*urticaria*), in which closely packed, shining, roundish and whitish

pea- to finger-nail-sized elevations of the skin are visible, surrounded by a slightly rosy border. Wheals are firm to the touch, and arranged in patches, circles, bands, gyrations, or striations, often disappearing in a brief time and recurring with or without a renewal of the cause. They are occasioned by a rapid exudation of serum into the rete or pars papillaris of the corium. This is due to clonic vascular spasm, producing irregularities in the lumen of the skin-capillaries, under the influence of the vasomotor nerves which supply a small area of the superior pars vascularis of the derma. The sensations produced are stinging, burning, pricking, and itching. Wheals are often surrounded by an areola.

"Giant"-wheals are such as have the dimensions of a hen's egg, or cover extensive areas of integument, as, for example, the entire surface of a buttock or a shoulder.

Relics of disappeared wheals are usually transitory erythematous maculæ, but in rare cases there is left a more or less deep pigmentation which slowly disappears (urticaria pigmentosa).

At times the wheal-like condition is assumed by papillæ, as also by lesions resulting from such traumatisms as the bites of insects, reptiles, horses, dogs, etc.

TUBERCULA (TUBERCLES) ARE CIRCUMSCRIBED, SOLID, GENERALLY INCOMPRESSIBLE AND PERSISTENT NODOSITIES OF THE SKIN, VARYING IN SIZE FROM THAT OF A COFFEE-BEAN TO THAT OF A CHERRY.

It should be carefully noted that tubercles occurring in diseases of the skin bear no relation whatever to the nodules having the same name which develop in pulmonary tuberculosis. The dermatological title relates solely to the size of the lesion.

Tubercles may largely be projected from the free surface of the integument, or be deep seated in the skin, and but a small portion become evident to the view externally. Their varieties as to shape, color, size, and other features correspond in great part with those described in connection with papules. They may be attached by a broad base to the skin, or be pedunculated, or even pendulous. Their seat is usually in the deeper portions of the corium or in the subcutaneous connective tissue. Degenerating and ulcerating tubercles are followed, as might be supposed in view of their volume, by considerable destruction of tissue, and correspondingly in cases of repair by extensive cicatrices. Tubercles are seen in such diseases as fibroma, molluscum epitheliale, syphilis, leprosy, sarcoma, and cancer.

Tubercles are often described as merely enlarged papules, but the distinction between these two forms of lesions will better be recognized when attention is paid to the particular portion of the skin in which each takes its origin. Papules spring oftenest from the superficial layers of the derma; tubercles, from the deeper layers. At times a tubercle may project from the surface to a less extent than a papule, though its larger volume is evident as soon as the skin within which it has developed is handled.

Tubercles due to a cellular infiltration may cease to be circumscribed, and by coalescence furnish a diffuse involvement of both the skin and the subcutaneous tissue.

Papulo-tubercles are transitional forms assignable to either of the two lesions named.

PHYMATA (TUMORES, TUMORS) ARE MASSES OF SOLID TISSUE, OR OF SOLID TISSUE MORE OR LESS COMMINGLED WITH FLUIDS OF VARIABLE CONSISTENCY, DIFFERING IN SIZE, SHAPE, COLOR, AND IN THE BENIGNITY OR MALIGNITY OF THEIR CAREER, LOCATED EITHER WITHIN OR BENEATH THE SKIN, OR, BEING ATTACHED TO THE SKIN, PROJECTING FROM IT TO A VARIABLE EXTENT.

The mere fact that a lesion of the skin approaches in dimensions the size of a tumor is in itself an element of gravity. Tumors may originate in mere hyperplasia of the living matter; may consist of new formations of greater or lesser danger to the vicinage or to the general economy; may be formed of blood-vessels or of lymphatic vessels, or of both in the same lesion; may embody large fluid-containing cysts; may be built up of nerve-tissue, fat, bundles of connective-tissue fibres, glandular elements, and indeed of any of the elements which exist physiologically in the human integument.

Examples of tumors are seen in fibroma, sarcoma, carcinoma, and rhinoscleroma.

VESICULÆ (VESICLES, PHLYCTENÆ, PHLYCTENULÆ) ARE ACUMINATE, ROUNDED OR FLATTENED ELEVATIONS OF THE HORNY LAYER OF THE EPIDERMIS WITH LIMPID, LACTESCENT, OR SANGUINOLENT FLUID CONTENTS, VARYING IN SIZE FROM THAT OF A POPPY-SEED TO THAT OF A COFFEE-BEAN.

Typical vesicles are seen in the minute, transitory lesions occurring in the vesicular form of eczema. They are usually filled with a clear serum. Variations from this type, however, are common. Thus, they may be either flattened, acuminate, roundish, umbilicated, or conical; may be fully distended or partially collapsed upon their contents; may have a short or long duration; may be distended with a milky, chylous, or blood-stained fluid; may be opalescent, yellowish, reddish, or blackish in color; several may coalesce to form a many-chambered bulla. One or several may undergo transformation into pustules or bullæ. Vesicles may terminate by accidental or spontaneous rupture, their contents freely flowing forth upon the surface of the peripheral integument; or they may desiccate to a crust; or may even terminate by one of the ulcerative processes. They may or may not be accompanied by pruritus. Minute vesicles, which are merely the external apices of large-chambered accumulations of fluid beneath, occasionally form upon the surface of the skin. Such are seen in the course of lymphangiectasis.

PUSTULÆ (PUSTULES) ARE CIRCUMSCRIBED CUTANEOUS ABSCESES, COVERED WITH AN EPIDERMAL ROOF-WALL, AND VARYING IN SIZE FROM THAT OF A MILLET-SEED TO THAT OF A FILBERT.

The typical pustule contains pus, and is colored yellowish, yellowish green, or brownish green, according to the admixture of its contents with blood. The pus being an inflammatory product, necessarily indicates the occurrence of an inflammatory process at the base of the pustule. Pustules, like vesicles, may be roundish, acuminate, globoid, conical, or umbilicated, and surrounded by an inflamed or normal

integument; may be superficial or be deep-seated; may terminate by rupture or by desiccation; may or may not be followed by an ulcer and ultimate cicatrix. They may be seated either upon the free surface of the skin, or at an orifice of a follicle, in which case they represent an inflammation with purulent product in the duct or the gland beneath.

Pustules may originate as such, or as a consequence of transformation of vesicles, or after a change in a papule, which may thus come to have a purulent apex. According to Auspitz, they invariably originate from vesicles. Pustules often result in the formation of crusts, the latter varying in color according as the pustules from which they originated contained a clear serum or blood.

Transitional forms between vesicles and pustules are termed *vesicopustules*. Pustules of a large size, resting upon an indurated, engorged, and elevated base are often called "ecthymatous."

Pustules are seen in syphilis, variola, eczema, scabies, acne, and many other cutaneous diseases, including several forms of dermatitis medicamentosa. Many contain pus-cocci; some furnish a "neutral," or pseudo-, pus destitute of micro-organisms.

BULLÆ (BLEBS) ARE SUPERFICIAL OR DEEP-SEATED ELEVATIONS OF THE SKIN HAVING FLUID CONTENTS, DIFFERING IN COLOR, SHAPE, AND CAREER, AND VARYING IN SIZE FROM THAT OF A COFFEE-BEAN TO THAT OF A GOOSE-EGG.

Blebs have been described as large vesicles; but this fails to define exactly their pathological character. Like vesicles, they may contain serum, lymph, blood, or pus, and may variously be colored according to the degrees in which their contents become visible through a semi-transparent roof-wall. They may be globoid, hemispherical, oval, crescentic, semi-crescentic, or conical, and may even exhibit angles. They may be seated upon an apparently unaltered or an evidently morbid integument; and may or may not present a peripheral areola.

Bullæ may persist or may rupture; may desiccate or may degenerate into ulcers; may collapse after the escape of their contents, and the roof-wall become glued to the base from which it was originally raised. Bullæ usually occur in extremely debilitated states of the system, and are, as a rule, of graver portent than other fluid-containing lesions of the skin. They occur in scalds and burns, in pemphigus, leprosy, erysipelas, syphilis, and moist gangrene.

Consecutive Lesions.—**SQUAMÆ (SCALES) ARE ATTACHED OR EXFOLIATED EPITHELIAL LAMELLÆ WHICH HAVE BECOME APPRECIABLE AT THE SURFACE AS THE RESULT OF SOME MORBID PROCESS IN THE SKIN.**

There is constantly in progress over the superficies of the body physiological desquamation, the evidences of which are not pronounced in skins properly cleansed by ablution. In morbid processes, however, desquamation may occur as a distinct symptom in various forms. Thus, the scales may be minute, fine, branny, dirty white or yellowish; they may be large, pearly white, shining; may be dry or fatty; may be aggregated so as to resemble flaky pie-crust; may exfoliate in extensive sheets, as from the entire sole of the foot or the palm of the

hand, or in glove-finger-like sheaths, as from the surface of a digit; they may be scanty, scarcely perceptible, and so firmly attached as to require force for their removal; they may fall spontaneously in a pulverulent shower, being so abundant as to encumber the garments or the bed-clothing of the patient.

Furfuraceous or pityriasic desquamation is that form in which fine, bran-like scales are shed from the surface.

Scales are frequently intermingled with other lesions, often succeeding the latter. Thus, a papule may scale at its apex, or surround its base with a collarette of loosened epidermal plates, beneath or between which a macular stain is visible. Again, scales may develop from macule, tubercle, or tumor. Though generally conceded to be evidences of a dry and non-discharging disease of the skin, they are at times accompanied or succeeded by moisture of the part affected.

The term *scales* is sometimes applied to the flattened plates of dried sebum that form on the scalp and on portions of the trunk in seborrhœa sicca.

Scales occur in eczema, psoriasis, pityriasis, ichthyosis, syphilis, and in several of the parasitic diseases of the skin.

CRUSTÆ (CRUSTS) ARE RELICS OF THE DESICCATION OF PATHOLOGICAL PRODUCTS OF THE SKIN.

Crusts never occur as primary symptoms of disease. When formed by the desiccation of serum only they are of a yellowish, straw-yellowish, or reddish-yellow hue; when composed largely of dried pus they are colored greenish or greenish yellow; and when there has been an admixture of blood they are usually brownish or blackish. At times they suggest in appearance gum, honey, or Venice turpentine; in shape they may have the form of the concavo-convex lid of a watch-case; in color and shape they may resemble the half-shell of an oyster or the carapace of a small turtle. They may be delicate and thin, bulky and thick, friable or mealy; may be firmly attached to the subjacent tissues or readily separable; may cover a sound though tender and reddened epidermis; may conceal a superficial or a deep, foul-based ulcer, by secretions from beneath which they are raised above the plane of the skin and increased in thickness; they may be circumscribed and no larger than a small finger-nail; may envelop an entire limb or organ, as the leg or the penis; or, finally, may be so irregularly disposed among other lesions—papules, pustules, excoriations, and open ulcers—that it is difficult to define their outline, or even to recognize their identity. Crusts formed of dried sebum are greasy to the touch, dirty yellowish in shade, and usually seated upon a non-infiltrated base.

Crusts are common in eczema, syphilis, leprosy, seborrhœa, and in a large number of other diseases of the integument.

EXCORIATIONS ARE SUPERFICIAL SOLUTIONS OF CONTINUITY, USUALLY INVOLVING PORTIONS OF THE SKIN AFFECTED WITH PRURITUS, AND RESULTING FROM MECHANICAL VIOLENCE.

Excoriations, in appearance among the most trivial of skin-lesions, possess a value from the diagnostic point of view which can scarcely be overestimated. They occur as striated, linear, punctate, circular, or

irregularly shaped, furrowed wounds, at times involving areas of flat surface, oozing with serum or blood, covered with dried blood or crusts, yellowish or reddish in hue, and for the most part both induced and accompanied by severe pruritus. They may coexist with hyperæmia and infiltration of the skin beneath, brought on by the irritative character of the continuous, or, more frequently, interrupted, cause by which they were begotten.

Excoriations become significant according as they indicate scratching, tearing, or other species of wounding by the finger-nails, and the rubbing of portions of the integument with foreign bodies. In the former case they are significantly recognized in those portions of the body most accessible to the hands, though in the case of eczematous children and infants they may originate by the rubbing together of the knees, or the rubbing of one leg by the feet and toes of the other leg. The loss of tissue may extend deeper than the rete, at times invading the papillæ of the corium, which bleed in consequence.

Excoriations may occur without the appearance of other lesions, as in the disease called "pruritus"; but where itching is severe and induced by a cutaneous exanthem the lesions constituting the latter may be intermingled with, obscured by, or even obliterated by excoriations and the pathological processes to which they give origin. Thus, macules, vesicles, pustules, and papules may undergo change; and the recognition of the type of the existing disease may correspondingly be difficult. Excoriations are common in skins wounded by lice, bed-bugs, and gnats; in the subjects of eczema, scabies, intertrigo, and prurigo; and in individuals with special sensitiveness of the integument to the action of a medicament employed either internally or externally.

RHAGADES (FISSURES) ARE LINEAR SOLUTIONS OF CONTINUITY, USUALLY OCCURRING IN PREVIOUSLY INFILTRATED PORTIONS OF THE SKIN.

Fissures may extend to the derma, and invade yet deeper structures; may be painful or the reverse; may be dry, secretory, or incrustated; are often hemorrhagic, and usually are formed with sharply cut walls. They are of frequent occurrence in the vicinity of the articulations, in which situations they are induced or aggravated by the joint-movements stretching or tearing tissue the extensibility of which has been diminished by any morbid process. Fissures may terminate in ulceration; they vary as to length, curve, and tenderness; they are often exquisitely painful, and greatly complicate the skin-disease in which they form; they may follow the curve traced by the boundaries of bodily organs near which they occur—as, for example, the line of the posterior junction of the ear with the head, or that of the breast of a woman with the thoracic wall upon which it rests.

Fissures occur in eczema, syphilis, dermatitis, and lichen ruber.

ULCERA (ULCERS) ARE LOSSES OF SUBSTANCE RESULTING FROM A PREVIOUS PATHOLOGICAL PROCESS INVOLVING THE CORIUM, AND, IN SOME CASES, THE SUBCUTANEOUS TISSUE.

Cutaneous ulcers differ greatly in size, shape, color, edges, base, career, and, indeed, in all their characteristics. Every ulcer has an

outline, a base, a floor, edges, and a secretion. The outline may be circular, crescentic, reniform, ovoid, serpiginous, or with horseshoe-like contour. The base, or underlying tissue, may be soft, supple, indurated, or in a state of active inflammation, with consequent infiltration. The floor may be glazed, shallow, deep, excavated, cup- or funnel-shaped, "worm-eaten," crateriform, sloughy, covered with a tenacious or a readily removed secretion, granular, puriform, or hemorrhagic. The edges may be clean-cut, having a punched-out appearance, undermined, everted, ragged, irregular, or contracting, with a whitish inner border of advancing cicatrization. The secretion may be scanty, limpid, puriform, profuse, ichorous, and odorless, or exhale an offensive stench. Ulcers may be so crust-covered as to be invisible, or so exposed and erosive in action as to render the affected surface in the highest degree unsightly. They may be acute or chronic, insensitive or productive of intense pain; may heal by cicatrization, remain open for a lifetime, or prove fatal either by destruction of parts essential to life or by exhaustion of the vital forces.

CICATRICES (SCARS) ARE NEW-FORMED SUBSTITUTES FOR LOST CONNECTIVE TISSUE.

Scars never succeed excoriations, fissures, or other solutions of continuity in the skin that have not penetrated as far as the derma and resulted in destruction of a portion of the elements of which the derma is built up. They possess the highest importance for the diagnostician, since they point invariably to a pathological process the career of which is terminated, the characteristic features of which termination they frequently embody. They may be regarded as the special and persistent imprints upon the integument of the serious disorders from which it has suffered.

To a certain extent, as already shown, scars retain traces of the special peculiarities of the lesions, and even of the diseases, which they succeed. The identification, however, of the individual predecessor in each instance is, in the present state of our knowledge, not always possible from a study of cicatrices alone. The extent of knowledge in this direction, however, is rapidly increasing; and in many cases the certainty thus acquired is of incalculable value to the diagnostician.

Scars are remarkable for their tendency to contraction and gradual decoloration. They may be minute, punctate, extensive in area, attached to underlying tissues, depressed, raised above the plane of the peripheral skin, seamed with furrows, pliable and soft, indurated, traversed by ridges, knotted, or as irregular in contour as the ulcers already described. They may extend in digital, linear, or annular prolongations toward contiguous portions of the skin, and by subsequent contraction induce considerable distortion and deformity. Thus, they may drag down an eyelid, and ectropion ensue; may glue the lobe of an ear to the cheek; may evert lip or nostril. When recent they are usually reddish in tint; when older they may be pigmented in centre or at circumference; or, as is common, may exhibit a gradual decoloration centrifugal in its progress. They may be the seat of pain from an entrapped nerve-filament; may reopen to ulceration; or may be unaccompanied by subjective sensation. Not rarely they become the

source of keloid. Scars are unprovided with hairs, papillæ, or the orifices of sweat-pores and sebaceous gland-ducts. As implied in the definition given above, scars may result from any disease or injury of the skin that involves loss of connective-tissue elements in the corium.

Unclassified Lesions.—To the several lesions defined above Bazin adds, as elementary forms, the mucous patch of syphilis, the cuniculus, or furrow, produced in the skin by the *Acarus scabiei*, and the sulphur-colored crusts of favus. Among the elementary lesions of the skin, Brocq includes the gumma, or firm, deeply situated, often subcutaneous mass commonly degenerating centrally rather than, as may the tubercle, from without inwardly; while among the consecutive (so-called “secondary”) lesions of the skin the same author considers “lichenization” or “lichenification.” These are terms chiefly employed by French writers to designate the changes in the skin produced by long-continued external irritation, the thickened and infiltrated integument assuming a yellowish-brown or reddish-brown tint, the exposed surface being studded with pinhead, pin-point, or slightly larger, shining and flattened isolated elevations, with delicate furrows separating each from the other. These, however, are not general, but special features of individual disorders, and are best studied in connection with the latter.

The elementary lesions of the skin are termed by Auspitz *anthemata*; groups of such lesions, *synanthemata*; and, in accordance with common usage, generalized eruptions affecting the entire surface of the body, *exanthemata*. The word *erythanthema* is used to describe groups composed of several of the elementary lesions of the skin, as, for example, of papules, vesicles, and pustules rising from a common reddened and hyperæmic base.

In addition to the names of the lesions of the skin just enumerated, certain peculiarities of cutaneous symptoms are described in qualifying terms which here require definition. They relate chiefly to the color, shape, distribution, and method or period of evolution of lesions as they are observed in individual cases. The more important of these terms, as used by modern writers, are alphabetically arranged below, with a brief explanation appended to each.

ABDOMINALIS. Located on the abdominal surface.

ACQUISITUS. Acquired.

ACUMINATUS. Having a pointed apex.

ACUTUS. Of acute course.

ADULTORUM. Occurring in adult years.

ÆSTIVALIS. Occurring in the summer season.

AGGREGATUS. Collected in patches.

AGRIUS. Acute, or angry in appearance.

ALBIDUS. Of whitish color.

ANGIECTATICUS. Vascularized.

ANNULARIS. } In the form of a ring.

ANNULATUS. }

APYRETICUS. Unaccompanied by fever.

AREATUS. Occurring in areas.

ARTIFICIALIS. Producing artificially.

ASYMMETRICALIS. Of different distribution on the two lateral halves of the body.

- AUTUMNALIS. Occurring in the autumn.
- BRACHIALIS. Occurring on the surface of the arm.
- CACHECTICORUM. Occurring in debilitated subjects.
- CAPITIS. Occurring on the head, usually the scalp.
- CAVERNOSUS. Large chambered.
- CHRONICUS. Chronic in course.
- CIRCINATUS. Of circular outline.
- CIRCUMSCRIPTUS. Having a definite contour.
- CONFERTUS. } Arranged in close proximity, with coalescence of lesions.
- CONFLUENS. }
- CONTAGIOSUS. Capable of transmission by contagion.
- CORPORIS. Occurring on the surface of the body; employed usually to designate an eruption upon the trunk, as distinguished from that on the head or the extremities.
- CRUSTOSUS. Crusted.
- CRYSTALLINUS. Of crystalline appearance.
- DIFFUSUS. Irregularly disposed.
- DISCRETUS. Having isolated lesions.
- DISSEMINATUS. Disseminate; without regularity of distribution.
- ERUPTION. Is used of the totality of all patches and lesions upon the person of one individual.
- ERYTHEMATOSUS. Having a reddish blush.
- ESSENTIALIS. Idiopathic.
- EXFOLIATIVUS. Having a tendency to exfoliation or shedding from the surface of the body.
- EXULCERANS. Exhibiting lesions with a tendency to superficial ulceration.
- FACIALIS. Located on the face, usually as distinguished from the scalp.
- FAVOSA. Displaying crusts of favus.
- FEBRILIS. Accompanied by a febrile process.
- FEMORALIS. Occurring on the surface of the thigh.
- FIBROSUS. Composed of fibrous tissue.
- FIGURATUS. Having a figured appearance.
- FLAVESCENS. Of yellowish hue.
- FOLIACEUS. Resembling a leaf or leaves.
- FOLLICULARIS. Concerning the cutaneous follicles.
- FUNGOIDES. Resembling a fungus.
- FURFURACEUS. Exhibiting numerous fine, bran-like scales.
- GUTTATUS. Of the size of a drop of water.
- GYRATUS. Having a serpiginous or gyrate outline, which is usually the result of a coalescence of imperfect circles or semicircles.
- HERPETIFORMIS. Vesicular or herpetic in type.
- HIEMALIS. Occurring in the winter season.
- HUMIDUS. Accompanied by moisture.
- HYPERTROPHICUS. Characterized by hypertrophy.
- HYSTRIX. Having lesions projected or erected like quills.
- IMBRICATUS. With crusts or scales overlain like tiles.
- IMPETIGINODES. Pustular.
- INFANTILIS. Occurring in infancy.
- INTERTINCTUS. Distinguished by color.
- IRIS. Occurring in more or less distinctly defined concentric rings.
- LABIALIS. Occurring upon the surface of the lip.
- LENTICULARIS. Of the size of a small bean.
- LIVIDUS. Deeply colored.
- MACULOSUS. Discolored.
- MADIDANS. Characterized by moisture.
- MARGINATUS. Having a defined margin.
- MEDICAMENTOSUS. Produced by external or (more commonly) internal medication.
- MELANODES. Of blackish color.
- MILIARIS. Of the size of a millet-seed.
- MITIS. Of mild, benignant type—the reverse of agrius.
- MULTIFORMIS. Exhibiting simultaneously several types of elementary lesions.
- NEONATORUM. Occurring in the newborn.
- NEURITICUS. Having nervous association.
- NIGRICANS. Of a black or blackish color.
- NODOSUS. With development of nodes or tuberosities of the surface.
- NUMMULARIS. Of the size of small coins.

- OLEOSUS. Accompanied by an oily secretion.
- PALMARIS. Occurring on the palms.
- PARASITARIUS. } Produced by an animal or a vegetable parasite.
- PARASITICUS. }
- PATCH. The aggregation of several isolated or confluent lesions.
- PHLEGMONOSUS. Accompanied by deep-seated inflammation.
- PHLYCTÆNOIDES. Characterized by groups of small vesicles.
- PIGMENTOSUS. Accompanied by pigmentation.
- PILARIS. Related to the hair.
- PLANTARIS. Situated on the soles of the feet.
- PLANUS. Flat.
- POLYMORPHOUS. The Greek equivalent of the Latin *multiform*.
- PRÆPUTIALIS. Situated upon the prepuce.
- PROGENITALIS. Situated upon the exposed mucous surfaces of the genitalia.
- PRURIGINOSUS. Accompanied by itching.
- PUBIS. Located upon the skin or hairs of the pubes.
- PUNCTATUS. Occurring in dots or points.
- RHAGADIFORMIS. Fissured, or tending to produce fissures.
- ROSACEUS. Having a rosy or pinkish hue.
- RUBER. Red; usually dark red in color.
- SCUTIFORMIS. Having the shape of a shield.
- SEBACEUS. Concerning the sebaceous glands or their secretion.
- SENILIS. Occurring in advanced years.
- SERPIGINOSUS. Literally, creeping; advancing in irregular gyrations.
- SICCUS. Dry; unaccompanied by moisture.
- SOLITARIUS. Exhibiting an isolated lesion, or with isolated lesions.
- SYMMETRICALIS. Similarly distributed on the two lateral halves of the body.
- TOXICUS. Poisonous.
- UNIFORMIS. Exhibiting lesions all of one type.
- UNIVERSALIS. Affecting the entire surface of the body.
- URTICATUS. Accompanied by wheals.
- UTERINUS. With association of uterine disorder.
- VARIEGATUS. Exhibiting several distinct colors.
- VASCULOSUS. Accompanied by vascular development.
- VERNALIS. Occurring chiefly in the spring of the year.
- VERSICOLOR. Exhibiting several shades of the same color.
- VULGARIS. Of the usual or commonly observed type.

III. GENERAL ETIOLOGY.

THE study of the causes of skin-diseases gives a glimpse of the etiology of diseases in general. In the lowest representatives of life the greatest dangers to existence originate in exposure to assault from other and stronger representatives in search of their prey—in other terms, an external danger. In man, the highest representative of the animal scale, the perils of existence are complicated by his social necessities and his artificial methods. He can never, however, at any period of his existence, divest himself from the necessity of exposure to external peril. The plan of his organs and the play of his normal activities are perfect, even to the recovery from all but mortal injury and repair of moderate loss. The struggle for existence of the ideal man is intended to be with that which is without; his body meanwhile furnishing him with a comfortable tenement and a fair fortress. In the purview of nature there should be no internal revolt. When such occurs it is usually the result of his ignorance, his folly, or his vice.

Viewed comprehensively the causes of diseases of the skin are seen to be numerous; extremely different from each other; some effective singly, others either alone or in combination with similar or different agencies; some operating slowly, others rapidly; some operating from within the body, others from without; some directly, yet others only very indirectly, exerting their forces upon the integument. The results are as diverse as the causes themselves. Some dermatoses produced by a single cause are similar in symptoms; others, originating from like causes, present scarcely the slightest resemblance to each other. It is from a study of this interesting field that much of the experience of the diagnostician is derived.

For convenience of classification, it is well to consider the causes of diseases of the skin: first, as internal agencies; secondly, as external agencies; thirdly, as agencies which modify diseases produced by any of the original factors capable of their production.

INTERNAL CAUSES.

Heredity.—Some cutaneous disorders, such as syphilis, are capable of transmission to a second generation. The prevalent doctrines, however, respecting the inheritance of a large number of cutaneous affections are without question erroneous. Still the fact remains, that whether keratosis, psoriasis, and some other diseases not recognizable at birth (as may be the lesions of syphilis), are at times the result of inheritance, it is certain that a predisposition to diseases of many kinds is in perhaps the majority of cases transmitted to a second generation.

The weakness or vulnerability of a given organ of the body renders it especially liable to external or internal sources of damage, and may be strictly inherited.

Visceral and Constitutional Disorders.—The group of affections commonly included in the language of the schools as within the field of “inner medicine” furnishes a large list of causes effective in the production of cutaneous maladies. Among visceral disorders may be named those of the kidneys (Bright’s disease, albuminuria, diabetes), giving rise to pruritus, angioneurotic oedema, eczema; of the uterus, giving rise to certain pigmentary changes in the skin; of the central or peripheral nervous system, as in urticaria, herpes, hemiatrophia, pruritus, alopecia; of the alimentary canal, producing eczema, acne, urticaria, etc.; of the adrenals, as in morbus Addisonii; and of the stomach, as in several of the gastric dyspepsias, which are capable of producing urticaria, erythema, acne, and rosacea.

Among the constitutional affections capable of originating disorders of the skin may be named glycosuria (apart from renal diabetes), which may be productive of glycosuric xanthoma; syphilis, which is responsible for an extended list of dermatoses; gout and rheumatism, which influence to a remarkable degree the oncoming of certain eczemas of the anal and other regions, multiform erythema, acne rosacea, and purpura; and disorders of the respiratory tract, some of which (*e. g.*, asthma) are well known to have a distinct relation to eczematous outbreaks, with which their attacks may alternate.

The **Nervous System** is responsible for a number of dermatoses. The nerve-centres, nerve-trunks, and nerve-terminals may largely influence inflammatory, congestive, and atrophic states; cerebral, spinal, and sympathetic nervous changes (trauma, new-growths, simple inflammatory thickenings, etc.) may be directly or indirectly concerned in attacks of pemphigus, zoster, scleroderma, urticaria, hyperidrosis, alopecia, and even grave ulceration of the skin. Pigment-changes in the skin and its accessories (hair and nails) have been produced by such causes.

Psychical perturbations, as in the shock following traumatisms, terror, bereavement, great and prolonged anxiety, and even the excitements of success in war and business have a demonstrable effect both on the nutrition and color of the skin and of the hairs and nails, as well as in the production of exanthemata, such as bullæ, vesicles, and several types of dermatitis. In the same connection may be named the results of maternal impressions upon the foetus, which, among the ignorant and to an extent also among men of science, are believed to be responsible for so-called “mother’s marks,” including pigmentary, papular, and vascular nævi, as well as the larger lipomatous tumors associated with hairy moles. The disorders designated “hysterical neuroses” constitute a small group of affections occurring chiefly in young and hysterical women, characterized by the occurrence of vesicular and bullous lesions, some taking on a gangrenous aspect, others exhibiting oddly arranged and defined streaks of dermatitis, to which latter the suspicion justly attaches that the lesions have been in great part produced by the patients themselves.

The **Sexual System** of both men and women, especially in young

subjects, may be a source of cutaneous disorders. Among them may be named the seborrhœas, acnes, and comedones, often aggravated by menstruation and by perversion of function in both sexes, progenital and menstrual herpes, pemphigus virginum, and certain of the erythematata. The several cutaneous affections recognized in the pregnant condition are often unquestionably associated with the condition of the gravid uterus. Of these, the most common are scarlatiniform erythema, impetigo herpetiformis, dermatitis herpetiformis, and verrucae of the vulvar region.

Auto-infection.—This is a field of investigation the confines of which have been barely touched by the explorations of modern science. At present it is demonstrable merely that the alimentary tract is traversed by innumerable micro-organisms which are wholly innocuous. Under certain favoring conditions, however, these germs may either be commingled with others introduced from without, and thus become in various degrees dangerous to the economy from slight perversion of health to actual destruction of life in a relatively brief period of time; or the innocuous parasites with and without the coöperation of the toxins they engender may suddenly become inimical to health from a change in their condition.

Ingesta.—Food and medicines are responsible for many cutaneous lesions in consequence, first, either of an inherent toxic quality in the substance ingested; or, secondly, in consequence of a special irritability of the alimentary canal existing at the time of such ingestion, the cause of the disorder being at other times ineffective.

Among the foods capable of producing urticarial distress may be named shell-fish, the smaller berries having seeds, cheese, pickles, oatmeal, buckwheat, mushrooms, olives, the skins and seeds of grapes and of oranges, and certain kinds of fish, as well as alcoholic beverages. A large list of medicinal substances is enumerated in the chapter on *Dermatitis Medicamentosa* which are capable of producing skin-eruptions. Among these may be named, as illustrative of the group, the salts of bromine and of iodine, arsenic, quinine, copaiba, belladonna, and a number of the new remedies produced by the action of glacial acetic acid upon the petroleum-products, such as antifebrin and phenacetine.

The **Physiological Crises** are not in themselves primary causes of dermatoses, seeing that the larger number of all members of the human family survive them without harm to the skin. It is none the less true that they furnish influences which modify and at times invite exanthemata. The possibilities of the pregnant state in connection with cutaneous disease have already been explained. Dentition is a period in which the child is often tormented by an eczema displayed in greatest profusion over the cheeks; and the puberal epoch of both sexes is one in which are manifested many of the disorders related to the repression, perversion, or excessive indulgence of the sexual function. Many of the chloasmata are conspicuous in women at the time of the menopause; and this also is a period in which may be recognized irregularities in the performance of the sweat-function as well as in the subjective sensations experienced in the skin.

EXTERNAL CAUSES.

Innumerable agencies operate from without capable of exciting or aggravating cutaneous affections: in fact, it may be set down that few if any of the forces operating externally upon the skin from the beginning to the end of life may not exert an unfavorable effect upon it if their operation be excessive, untimely, or associated with other externally operating factors. Briefly, some of these agencies operate singly; others in coöperation; some operate with grave, others with trifling effect; some invariably, others but rarely, induce a deleterious effect upon the skin; some, though exerting an influence wholly external to the skin-surface, coöperate with internal agencies. In the latter class may be named the hand of the syphilitic subject, which may exhibit syphilodermata largely due to the influence of the articles handled in the trade or occupation of the subject of the disease.

Scratching is a fruitful source of cutaneous trouble either when operating to originate or to aggravate an exanthem. Its symptoms are carefully studied by all diagnosticians, as they betray evidences of itching, which the efforts at scratching are exerted to alleviate. The regions most affected when scratching is severe (as in prurigo, scabies, pediculosis, and the forms of pruritus dependent upon visceral disease, such as glycosuria, tuberculosis of the adrenals, etc.) are, as a rule, those most readily reached by the hands either of an infant or an adult. In these parts may then be recognized the excoriations, frequently in two, three, or four parallel or approximated lines, blood-specks, pustules, papules, thickening, and even extreme induration and pigmentation of the skin, due solely to the traumatisms of the surface of the integument.

Solar Light and Heat, and Thermal Changes (whether due to solar or artificial influence, as well as cold), are frequent and efficient sources of damage to the skin from the slightest grade of inflammation to the severest destruction. To solar light is to be attributed the production of freckles, tan, and other pigmentations of the surface; to heat are to be attributed the erythema, the eczema, and the various grades of dermatitis which may follow exposure to the direct rays of the sun. Other temperature-effects, including those produced by extremes of both heat and cold, are to be classed in the same category. Exposure of the skin to a temperature of over 100° F. produces merely a transient erythema, which under a further elevation of sixty-five degrees will not subside for several days. At a temperature of 212° F. all grades of acute dermatitis are awakened, with the production of bullæ, up to the point at which complete destruction of the integument occurs.

The **Influence of the Seasons** is of the same general character. Some cutaneous diseases are worse in summer; others in winter. Prickly heat (*lichen tropicus*) is peculiar to certain warm seasons; frostbite, with its subsequent hyperæmia, exudation, or gangrene, occurs in winter; pruritus is common in cold weather; erythema multiforme is most frequent in the autumn and in the spring.

Exposure of the Naked Skin to the X-rays in securing skiagraphs

and similar records, the serious effects of which have been noted, are probably due less to burning than to the actual transmission of exceedingly minute metallic particles carried not merely to the skin itself, but to the subcutaneous tissues, and even to the deepest structures examined by the aid of the ray. As a result, not merely severe and persistent inflammation and ulcerations of the entire skin have been produced, but changes have been wrought in the bones and periosteum.

Climate has a determining influence upon many cutaneous disorders, and this of a sort which it is difficult to assign either to internal or external influence. The effects of climate are exceedingly complex, and probably include the agencies which favorably or unfavorably affect the health in the direction of atmospheric humidity or dryness; abundance or scarcity of sunlight; the prevalence of favoring or injurious winds and storms; a salubrious or insalubrious food- and water-supply; the average temperature of the earth's surface by day and by night; the presence or absence of sources of malarial plasmodia; and proximity to the sea, to mountain regions, or to extensive growths of pine forests. Thus leprosy, Lombardy erysipelas (pellagra), biskra bouton, ainhum, and other affections, though not seen exclusively in one country, are for the most part prevalent in countries which may well be contrasted with others where such affections are regarded as curiosities. Mycetoma, for example, has been studied for the most part in India, while less than half a dozen cases of that disorder have been recognized in the North American continent.

Occupation.—An enormous number of dermatoses are due exclusively to the occupations of men and women. In France, where such occupations are highly specialized on account of the artistic and skilled work of the people in numerous lines, these disorders are known as the "professional dermatoses," and the diagnostician there is often enabled to decide the character of the work performed by the laborer on inspection of his hands. The workers in dyes, in chemicals, and in drugs suffer in one way; the men who handle tiles, bricks, mortar, or clay in another; the baker, the confectioner, the cook, the laundress, the green-grocer, the seamstress, the shoemaker, the carpenter, and the machinist have each their forms of erythema, dermatitis, keratosis, or induration. Similarly those whose faces are much exposed, as the wheelmen of vessels, tramcar-drivers, locomotive-engineers, and day-laborers, exhibit symptoms in that region. Butchers, wool-workers, cattle-men, and sheep-shearers are liable to contract glanders, ring-worm, or malignant pustule. They who handle the bodies of the dead are prone to tuberculosis of the hands (anatomical tubercle), and those compelled to stand much of the time are exposed to the consequences of varicose veins of the legs and resulting eczema of that region.

Clothing.—The coarse clothing worn by the poorer classes is often a source of skin-mischief, particularly when employed for infants; and persons of both sexes and all ages exhibit marked results from the wearing of flannel next the skin. Often the influence of clothing is commingled with that of dyes, as when brightly tinted flannel colored with anilin produces a dermatitis of high grade with distinct staining of the skin over which such clothing has been worn. In the same list

must be included the effects produced by ill-fitting shoes, corsets, trusses, napkins, "pads," supporters, crutches, orthopædic apparatus, hat-bands, stockings, garters, and chest-protectors. Here, too, more than one cause may be efficient in the production of disease, as when clothing becomes a nidus for parasites, or is worn next the skin when soiled with abnormal or even physiological secretions.

Chemical, Medicinal, and Mechanical Irritation may be responsible for many affections of the integument. Of articles effective in the first category, may be named the stronger acids and alkalies; of those in the second class, arnica, croton-oil, mustard, *Mucuna pruriens*; of those in the last class may be suggested all substances capable of exerting undue friction upon the surface, such as pumice-stone, combs, brushes, towels, and the articles employed in the operations of the manicure.

Filth is a potent factor in both the production and the aggravation of skin-diseases, its effects being decidedly most apparent in patients applying to the public dispensaries. In infants the skin unwashed even for a fortnight usually becomes the seat of an irritating urticaria.

Traumatism plays a most important part in cutaneous etiology. It includes the action, in scratching, of the nails, the knees, heels, elbows, etc., as well as the influence of several articles used for the same purpose—pieces of cloth of various kinds, etc. In this way excoriations, and even infiltrations, of the skin are induced. Under the head of traumatism should be considered also injuries of the skin-surface produced by animals, occasionally with the added effect of a toxicant. Here are included the wounds produced by lice, fleas, bugs, and acari; the bites of serpents, horses, dogs, and cats; and the accidents producing traumatism of every kind, not omitting the intentional wounds inflicted by the surgeon and their results.

Transmission by Contagion, by Infection, and by Parasites.—Some disorders with cutaneous phenomena are transmissible from diseased to healthy persons through the medium of the atmosphere, and are termed *infectious*; others are termed *contagious* when transmissible solely by contact. Some maladies, such as variola, scarlatina, and measles, are conveyed by both methods, and hence belong to the category of both contagious and infectious disorders. Yet others are transmissible only through infection with a specific virus; such diseases are syphilis and lepra. By many writers the terms infectious and contagious are used as synonyms.

Parasitic Diseases.—Under this title were once included solely the dermatoses induced by the presence of the animal and vegetable parasites. Among the former may be named scabies and pediculosis; among the latter, ringworm of the scalp and of the beard. But the term parasite has acquired a much wider scope since the recognition of the micro-organisms which have been demonstrated to be efficient in the production of a long list of cutaneous affections. Among these may be named the bacilli productive of cutaneous tuberculosis and of lepra; the pus-cocci, responsible for the several forms of impetigo and pustular eczema; and the streptococci, recognized in several forms of dermatitis. In most of the dermatoses which are recorded to-day as

parasitic, germs have been recognized, which either singly or in coöperation with others have been proved to be effective in the production of these disorders, or have been demonstrated to play an active part in either their extension or exacerbation.

The popular ideas respecting the frequency and danger of contagion in diseases of the skin are often erroneous. The non-parasitic affections are, and probably always will be, more numerous than all others. The danger of communicating scabies, syphilis, and other affections by handshaking is not as great as is generally believed. On the other hand, the dangers which by the mass of people are little considered are often the graver and more to be avoided. Among these may be named the use in public of the roller-towel, the drinking in common from public cups and glasses, promiscuous kissing, contact with the lower animals exhibiting diseases of the hide, of fur, or of feathers, the wearing of a stocking on one foot which the day before was worn over the surface of a fellow-member the seat of disease, and the wearing of velvet- or fur-trimmed collars on top-coats after the occurrence of a disease of the skin of that part of the neck with which the garment is naturally brought into contact.

IV. GENERAL PATHOLOGY.

THE pathological processes and changes in the skin correspond in general to those occurring in other organs of the body, but they are modified by the peculiar and complex structure of the integument and by its exposure to many and varied external influences. Frequently the skin is but one of several organs involved in a common process, as in malnutrition, syphilis, or leprosy. More commonly the pathological changes in the skin which are largely or entirely dependent upon general conditions are not accompanied by similar alterations of other organs. In this category belong the toxic erythemas, some eczemas, and many other dermatoses. In a large number of disorders of the skin no disturbance of the general economy can be discovered. The relation of cutaneous disease to toxæmias, to vasomotor, nervous, trophic, and other constitutional disturbances, and also to micro-organisms and other local influences is discussed in the chapter on General Etiology. Many of the pathological processes involving the skin are but imperfectly understood, and are difficult to study because of their constant modification by external influences; but the pathological anatomy explaining these processes has been extensively investigated, and offers a favorable field for further research, since the freely exposed surface renders it easy to remove tissue for study at any desired stage of the process.

The vascular portion of the skin is the corium, in which inflammatory, hypertrophic, atrophic, and other changes, including new-growths, correspond more or less closely with similar changes in other organs of the body. Special features are found in the involvement of the coil-glands and sebaceous glands, and of the hair-follicles. The large amount of elastic tissue and the degeneration to which it is subject may greatly modify the histological appearances of a section under examination.

It is chiefly the epidermis, however, with its peculiar structure and its independence genetically of the corium that gives to cutaneous pathology its chief characteristics and presents its most difficult problems. The rete is the most important layer, and participates in all inflammatory and in most other diseases of the skin. It is subject to intercellular and cellular œdema, to several forms of cell-degeneration, to hypertrophy and to atrophy, and is specially active in all epithelial new-growths. In its deeper layers of cells occur the various modifications of the true pigment of the skin. In a large class of cutaneous disorders, characterized by an excessive or abnormal cornification (hyperkeratosis and parakeratosis) of the upper rete-cells in the formation

of the horny layer, the most manifest changes are in the granular and the horny strata.

The inflammatory diseases of the skin have been supposed to begin in the corium, the epidermis being secondarily involved. It is probable, however, that in many instances the vascular disturbances are preceded by changes in the terminal nerve-filaments and adjacent cells of the rete.

V. GENERAL DIAGNOSIS.

THE establishment of an accurate diagnosis in cutaneous diseases is essential to their successful management. This statement is rendered necessary in this connection by the prevalence of a belief among the uneducated that the disorders of the skin, exhibited for the most part in visible symptoms, can safely be treated on general principles without a recognition of the nature of the malady. By many practitioners the demand for an accurate diagnosis is ignored in consequence of a too general impression that the desired end is to be pursued through great and perplexing obscurity. Yet with patience, method, a habit of careful observation (without which no physician is successful), and a reasonable degree of skill both practitioner and student can, in the large proportion of all cases, attain their purpose.

It is a popular error that the sole requisite for establishing a diagnosis is the exhibition of an affected portion of the integument to the eye of him who is consulted with a view to its relief. The physician is supposed to inspect this surface attentively for a few moments, and then to pronounce definitely upon the nature of the disease present and the therapeutic measures to be adopted. While such a procedure is possible to the expert in a limited number of cutaneous disorders, in a large number of cases far more than this is requisite, and, indeed, is fully as essential here as in the investigation of disease involving any other organ of the body.

It is true that erythema, urticaria, dermatitis, eczema, purpura, alopecia, and many other affections of the skin may often be recognized after simple and brief inspection of the region involved; but the cause of such disorders and their relation to the general health of the patient, all of which knowledge is essential to their proper treatment, can only be obtained after a much more thorough examination. As a rule, it is desirable, first, to secure a history of the physical and mental condition of the patient in the past; then should follow the special history of the disorders of the skin; lastly, an examination of the patient and of the affected integument. The family history may be of value in making a diagnosis. For the purpose of methodically arriving at these facts, and of preserving them for future reference, they should systematically be recorded. The following are some of the points upon which it will generally be found useful to secure information:

The name, residence, age, sex, occupation, and married or unmarried state of the patient should be known, as also, whenever practicable, the health-history of parents and children. In the case of women it is not only necessary to learn the history of the menstrual function in the past, but it is of the highest importance to be informed also as to

the previous occurrence of abortions and miscarriages, and, if such have occurred, the order observed by these with relation to the birth of viable infants. The significance and value of several of these facts have been described in the chapter on Etiology. With respect to the history of the products of conception, it should never be forgotten that it has a most important bearing upon the question of syphilitic infection. The absolute exclusion of syphilis in any obscure case is a long step in the direction of an accurate diagnosis. In the instance of male patients, questions will usually elicit either admission or denial of the fact of a precedent or present venereal disease, and the answers should be regarded as valueless or trustworthy according as they are or are not substantiated by corroborative clinical facts.

Then should follow some record of the habits of the patient, as to active or sedentary employment, bathing, food, and drink, including under the latter term the use of beer, wine, and spirits. The history of any previous disorders, whether of the skin or other organs, should be satisfactorily clear, and the dates of occurrence, recurrence, and convalescence be at least approximately discovered. The patient should also make known whether he has had refreshing sleep; whether he has undergone mental anxieties (domestic, financial, etc.); whether he has suffered in his digestive, respiratory, circulatory, genito-urinary, or nervous system. Defects in elimination, assimilation, and nutrition should be noted; and when the symptoms suggest disease of other organs than the skin the patient should be subjected to the proper physical examination.

This much ascertained, the patient should be encouraged to narrate as succinctly as possible, and as far as may be in his own terms, the history of the present cutaneous disorder. A systematic series of questions put by the examiner should disclose, if possible: the cause of the disorder; its appearance when first seen, and any changes in character and type which have since occurred; the regions of the body affected, in order of involvement; the method of extension, by peripheral enlargement of the early areas, or by the appearance of new lesions at a distance from the first ones; the rapidity and regularity of the progress of the disease and its duration; the subjective sensations; and the influence of seasons and temperature upon the disorder. The treatment to which the disease has been subjected should then be detailed, this frequently furnishing a key to the diagnosis and therapy of the malady. In an incredibly large proportion of all cases ignorantly directed and vicious internal or external medication has either begotten or aggravated the disease of the skin. This much ascertained, the physician is ready to examine the affected surface for himself.

During, however, the verbal interrogations which are required for this part of the exploration of the case, the watchful and observant practitioner will probably have secured for himself some useful information of which the patient is totally unconscious. Much of this is difficult to describe, as it is the rich fruit of wide experience and careful scrutiny. With a gentle, courteous, and sympathizing manner the diagnostician must combine the art of a detective and the skill of a swordsman. Glancing occasionally at the face of his patient while

making record of the answers given, he will, of course, have observed any eruption upon that portion of the body. He will have made a mental note of the temperament of the sufferer, and of any movement made by the latter indicating a tendency to scratch or rub portions of the skin. He will have noticed the posture, clothing, and head-apparel; the existence of hair on the scalp or extensive baldness; the condition of the exposed hands as indicating manual labor or the reverse; and, in the absence of facial lesions, will have observed the special tint of the skin of the face, as suggesting anæmia, chlorosis, or a general condition of cachexia. The facial expression, as indicative of anxiety or placidity, habits of debauch, sexual excesses, etc., will not have escaped his attention. All this and much more will possibly have enabled the questioner to direct his interrogatories into the channel in which they will elicit the most useful responses. The posture, cries, facial expression, and general condition of nutrition of the infant will have been no less carefully noted.

Proceeding to the examination of the affected integument, the physician must assure himself of a good light, as colors are best distinguished by daylight and artificial illumination should be reserved for exploration of the cavities of the body. The air of the apartment should be sufficiently warm to permit of exposure of the person without discomfort and without causing disturbance of the cutaneous circulation. Adult males and children of both sexes should have the clothing completely removed so that all portions of the skin may be inspected. One portion of the body may, however, be examined, and then covered if desired, while the examiner proceeds to direct his attention to another part. In the case of women the investigations should be conducted with all the tact and delicacy to which the sex is entitled.

The examination, whenever practicable, should extend over the entire surface of the integument. The importance of this point can scarcely be exaggerated. It must be remembered that the physician should be very much wiser than his patient, and the assurances of the latter are always to be accepted with reserve. Thus, one who merely exposes his leg, stating that this is the only part of his body affected, may have concealed beneath his clothing extensive varicosities of the veins of the thigh, a typical syphilitic exanthem over the belly, a significant scar on the elbow, an extensive patch of tinea versicolor on the surface of the chest, or a blennorrhagic discharge from the urethra, the medication of which has induced the rash for which he seeks relief. These are not the rare, but are the common cases of a daily experience.

Observation should be had at this time of the general and special features of the eruption. As to the former, the following considerations should be borne in mind:

The original manifestations of a cutaneous disease may be masked or entirely hidden by the lesions resulting from scratching, or by a dermatitis due to local applications, or to drugs swallowed for the relief of the original disorder. It is of the greatest importance that the accidental nature of these symptoms be recognized, as they otherwise lead to great confusion in diagnosis.

A very few diseases may involve the entire surface of the body, leaving no part unaffected, and are then called universal; more frequently an eruption affects at one time several or most of the regions of the body-surface, and is then called generalized; much more commonly an eruption affects a considerable portion of but one or several regions, and is said to be diffuse; or it is limited to small areas of one or several definite regions, and is known as a local eruption.

A symmetrical eruption, one equally distributed over corresponding regions of the two lateral halves of the body, is rarely the result of an etiological factor operating upon the outer skin. It more often points to an efficient cause of so-called "internal" origin, one influencing the inner skin or the internal organs. An eruption affecting the covered integument, never creeping out upon the exposed surfaces, suggests the operation of the clothing, as the latter may chance to prove the nidus or protector of a parasite, the fabric which has been colored by a noxious dye, the recipient of a chemically altered secretion which has proved irritating to the surface, the instrument of friction, or the source of increased temperature at the surface by its non-conductivity of heat and unseasonable thickness. An eruption accompanied by excoriations and scratch-lines is usually severest in the parts most accessible to the hands, and least developed where the latter have the least play, as over some parts of the back. An eruption limited to the hands is likely to be one induced by an agent to which the hands alone have been exposed. Such are the eruptions originating in the trades and domestic occupations; in the latter, an eruption more distinct on the right hand, and especially about the right thumb and index finger, tells its own story when the hand-worker is not ambidextrous nor left-handed. Artificially and intentionally produced eruptions, as in malingering, hysteria, mental depravity, and insanity, usually occur also in parts to which the right hand finds easy access.

Eruptions occurring on the face, the hands, and the genitalia of men, or on the face, hands, and mammæ of women, point to external contact or contagion (poison-ivy, scabies, croton-oil, etc.), since, next to the face, the hands are more commonly brought in contact with the parts named in the sexes respectively, as the wearing-apparel of each suggests.

An eruption limited to the forehead suggests an inspection of the hat-band, the veil, or the overlying false hair; to the ears of women, a glimpse at possibly cheap ear-rings; to the centre of the root of the neck, before or behind, a scrutiny of the collar-button and collar; to the anus of the baby, an inquiry as to the changing of its napkins; to the wrists of the adult, a question as to the cuffs worn; to the feet, information respecting gaiters, varicose veins, recently cut corns, and ill-fitting boots. Eruptions springing from each of these causes have long and vainly been treated as "diseases of the blood."

Eruptions markedly asymmetrical are indicative of asymmetrically operating causes—that is, the accidents of environment, or else influences exerted within the body unequally on its two lateral halves. Thus, an orthopædic apparatus worn to correct talipes excites a dermatitis of the leg of the affected side only; and zoster of the trunk is

evident on that side supplied by the intercostal nerve which has been inflamed. The greater stress may be laid on this peculiarity, as the law of symmetry, in eruptions not occasioned by causes operating on the outer skin, is faithfully observed in nature. The earlier syphilides, the quinine-exanthem, rubeola, and even lupus erythematosus, are remarkable illustrations of this fact.

Proceeding with the visible characteristics of the disorder, the physician will not fail to note an acuteness or chronicity of the eruption; also, the presence or absence of an exudate on the surface.

After obtaining an impression of the general features of an eruption the individual lesions should be carefully studied. The type of lesion (papule, tubercle, vesicle, etc.) should be noted. When the lesions are multiform the different types should be examined to determine, if possible, which are primary and which secondary in appearance, which are essential and which accidental in the process. For the purpose of studying the characteristics of the individual lesions, those of most recent appearance (usually at the border of a patch), and as yet unmodified by scratching, treatment, and other influences, should be selected. Often, however, the full evolution of a lesion requires time, and its successive stages should be determined by observing a number of lesions of different ages.

The arrangement of lesions varies greatly in different diseases. When grouped such lesions may develop in circular, oval, angular, or irregular-shaped areas; or in circinate, gyrate, serpiginous, straight, or irregular bands and lines. In some affections (as ringworm, psoriasis, syphilis) the areas may clear in the centre as the border progresses. Lesions may be grouped, and yet discrete in that each lesion preserves its outline and identity; or they may coalesce so completely that all trace of the form of the individual lesion is lost.

The definition of lesions is another important diagnostic feature in which cutaneous affections vary greatly: the line dividing the diseased from the normal skin may be so sharp and fine that it can be traced with the point of a pin; or the lesion may shade so gradually into the normal skin that its outline cannot be definitely determined, and it is said to have poor definition or none.

The color of lesions of the skin often depends greatly upon circumstances having no bearing upon the disease in question. It thus varies with the natural color (light or dark) of the individual's skin, with the temperature of the surface, and with the amount of irritation to which the surface has been subjected by friction of rough clothing, scratching, treatment, etc. There are, however, some diseases (syphilis, lichen planus, tinea versicolor, favus, and others) in which the color may be of great importance in the diagnosis, and there are many maladies in which consideration of this characteristic of the eruption is of value if the accidental modifications be borne in mind. The acuteness or chronicity of a disease is often indicated by the color of the lesions. The persistence, modification, or disappearance of color under pressure should be noted. For this purpose a small glass disc or glass tongue-depressor is better than the finger.

In judging of the size of a lesion it is sometimes important to learn,

by palpation, how much of it is above the general surface of the skin and how much is more deeply situated. In noting the shape of papules, tubercles, vesicles, and pustules, both apex and base should be taken into consideration. Thus, the apex may be pointed (acuminate), rounded (obtuse), flat (plane), or depressed (umbilicated). The base may be round, oval, angular, polygonal, or irregular.

The situation of lesions in or about the hair-follicles or at the opening of the ducts of the sebaceous or coil-glands is a diagnostic point of great value. It is important to know if certain lesions appeared first on normal skin, or if they originated in other lesions. Thus, vesicles and pustules may arise from sound surfaces, or from the apices of papules or tubercles. The majority of even the elementary lesions are probably preceded by macules, which, however, are usually so transitory as to be unrecognized and unimportant.

The career of an individual lesion, which often bears no relation to the duration of the disease as a whole, should be noted. Thus, the vesicle of eczema rarely exists as such for more than a few hours, though by the formation of new vesicles eczema may persist for months, while in zoster individual vesicles last several days, though the disease as a whole is short-lived. In some diseases the type of lesion remains the same throughout its career unless modified by treatment or external influences, while in others the type changes or is complicated by other types. Thus, the papule may be modified by developing at its apex a vesicle or pustule. The career of lesions can usually be studied, not only by watching them from day to day, but also—and more easily—by observing at one time a number of lesions in various stages of development.

As the lesions of different affections vary greatly in their evolution and career, so do they in their involution. While in the majority of instances it is the recent and newly formed lesion that is most desirable for purposes of study, there is often much to be learned from the manner in which lesions disappear and in the traces they leave behind. The papule or tubercle which ulcerates usually suggests (aside from some rare diseases) syphilis, tuberculosis, or carcinoma, and may be sufficient to exclude from the diagnosis the possibility of psoriasis, seborrhœa, and other superficial affections. In a doubtful case the termination of some of the lesions in scar-tissue may be the one fact needed to make a differential diagnosis between seborrhœa and lupus erythematosus, or between a circinate form of psoriasis and a similar type of syphilitic eruption. Pigmentation sufficiently characteristic for a diagnosis is left after the otherwise complete involution of some lesions. This is most frequently true in zoster, lichen planus, and some forms of syphilitic eruptions. In estimating the time of involution of lesions and in making a prognosis regarding the disappearance of pigmentation (a point upon which patients are often very solicitous) it should be remembered that pigment is usually removed very slowly from the lower extremities and other dependent portions of the body, and that in such localities it may persist for months or years after it has disappeared from parts in which the return-circulation is better.

Certain lesions have special features that should be studied. These

are given in detail in the last division of the outline at the end of this chapter.

Before concluding his examination the physician will rupture a bleb, pustule, or vesicle, should such be found, to discover the nature of its contents. He will remove one or several crusts in sight, to expose the surface on which they rest. He will scrape away a few scales with the dermal curette for a similar reason. He will pinch up between his thumb and finger a portion of each part, in order to determine its infiltrated condition, its atrophy, or its attachment to the tissues beneath. He will pass his hands over the surface to recognize the firmness or the softness of the lesions, their inflammatory, hyperplastic, or neoplastic character, their dryness or moisture, and the existence of sebaceous or of perspiratory secretion. He will look at the mouths of the follicles where such secretion is retained or is abundantly exuded. He will discover any lice or their ova between or upon the hairs, any ascarides at play about the anus, any morbid formation of the nail or deformity of its matrix. He will examine for inguinal, post-cervical, axillary, and epitrochlear adenopathy, and will thus be often greatly aided in his task. This done, he will question in turn for himself, and by the methods recognized in medical science, the organs of the body other than the skin. He will inspect the tongue carefully, and if then he considers himself through with the mouth he will be guilty of great error. The gums rarely deceive the questioning eye; the inside of the lips, the fauces, and the tonsils are all to be searched. A mucous patch here will often echo the story of a palmar or a plantar syphiloderm. The laryngoscope may be called for in syphilis, cancer, lupus, and leprosy. The degree of distention of the belly and the region of hepatic dulness should not be overlooked. The genitalia of men, and of children and infants, can usually be explored. For women unaffected with syphilis or disease limited to these parts an exception in this particular should usually be made.

In many cases the microscopical and bacteriological examination of hairs, scales, crusts, exudate, or tissue will aid greatly in the diagnosis, and should not be neglected. In some instances such examinations are essential to the formation of a correct diagnosis.

With the necessary reserve of all very obscure cases, it may be said that the physician who has conscientiously conducted an examination after the manner described above is in possession of the diagnosis for which he seeks. If the facts thus acquired have properly been recorded, and yet do not spell out such a diagnosis to his eyes, they will probably be legible to others with a wider experience or riper judgment, to whom such a record may be shown. It is not claimed that this exhaustive method of examination is requisite in every case, as, for example, in order to recognize a favus or to differentiate erysipelas from erythema. But it is certain that few obscure cases of skin disease will remain such under severe scrutiny, and the establishment of a thorough and exhaustive method of examination is important in the earliest experience with disease. Let the student or the practitioner conduct such an examination in the first few cases of eruption upon the surface of the body for which his advice is sought, and he will

establish a habit of observation in comparison with which his pecuniary or professional success in the management of the same cases will indeed be of trivial worth.

Upon one special point should the inexperienced physician be guarded. It relates to the acceptance of a diagnosis which is *not* based upon such an examination as that given in outline above. A diagnosis by a patient is usually faulty, and the verdict of even skilled practitioners may be founded upon an error. The careful diagnostician should begin his task in a spirit of skepticism, and pronounce definitely only upon ascertained facts. The man who says he has an "eczema" may be louse-bitten; the woman who has been "overheated" may prove syphilitic. The patient recognized as suffering from ringworm of the beard may not have been infected under the hands of a barber. Finally, the eruptions upon patients unmistakably syphilitic are often of other than syphilitic origin. These infected subjects—men, women, and children—are exposed daily to the accidents from which the non-infected suffer. They exhibit acne, physiological alopecia, and dermatitis medicamentosa equally with the non-syphilitic.

The following outline for the methodical examination of a patient affected with skin-disease is based on the subjects considered in the preceding pages, and is given in such detail that a careful investigation of the questions suggested should furnish material for all but exceptional cases. For the average case much may be omitted.

The first attempts to follow such a scheme are necessarily tedious, and therefore often discouraging; but one patient thus carefully examined is of greater educational value than an aimless and indefinite examination of a dozen cases. There is no greater economy of time than is found in methodical and systematic habits of work.

HISTORY.

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| <p>I. NAME AND RESIDENCE.</p> <p>II. AGE.</p> <p>III. SEX.</p> <p>IV. MARRIED OR UNMARRIED.</p> <p style="padding-left: 20px;">1. Children.</p> <p style="padding-left: 40px;">a. Living.</p> <p style="padding-left: 40px;">b. Dead.</p> <p style="padding-left: 20px;">2. Abortions or Miscarriages.</p> <p>V. FAMILY HISTORY.</p> <p>VI. INDIVIDUAL HISTORY, <i>including that of previous skin-diseases.</i></p> <p>VII. OCCUPATION.</p> <p>VIII. HABITS, <i>of eating, drinking, bathing, tobacco-usage, etc.</i></p> <p>IX. PRESENT STATE OF HEALTH.</p> <p style="padding-left: 20px;">(<i>Note the condition of the digestive, re-</i></p> | <p style="padding-left: 20px;"><i>spiratory, circulatory, genito-urinary, and nervous systems; also, defects in assimilation, elimination, and nutrition.</i>)</p> <p>X. HISTORY OF PRESENT SKIN-DISEASES.</p> <p style="padding-left: 20px;">1. Cause—if known.</p> <p style="padding-left: 20px;">2. Character at first.</p> <p style="padding-left: 20px;">3. Sites affected in order.</p> <p style="padding-left: 20px;">4. Manner of progressing.</p> <p style="padding-left: 40px;">a. Slow or rapid.</p> <p style="padding-left: 40px;">b. Steady or irregular.</p> <p style="padding-left: 40px;">c. With exacerbations and remissions.</p> <p style="padding-left: 40px;">d. With periods of entire freedom from symptoms.</p> <p style="padding-left: 20px;">5. Changes in character.</p> <p style="padding-left: 20px;">6. Subjective sensations.</p> <p style="padding-left: 20px;">7. Duration.</p> <p style="padding-left: 20px;">8. Effect of temperature and seasons.</p> <p style="padding-left: 20px;">9. Treatment to date.</p> |
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OBJECTIVE SYMPTOMS.

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| <p>A. ACCIDENTAL COMPLICATIONS <i>due to scratching, treatment, etc.</i></p> <p>B. SITE.</p> <p style="padding-left: 20px;">1. Universal.</p> <p style="padding-left: 20px;">2. Generalized.</p> <p style="padding-left: 20px;">3. Diffuse.</p> <p style="padding-left: 20px;">4. Local. (<i>Note influence of clothing, occupation, etc.,</i></p> | <p>C. SYMMETRY, <i>or asymmetry.</i></p> <p>D. ACUTENESS, <i>or chronicity.</i></p> <p>E. MOISTURE, <i>or absence of.</i></p> <p>F. INDIVIDUAL LESIONS.</p> <p style="padding-left: 20px;">1. Elementary (<i>macule, papule, wheal, tubercle, tumor, vesicle, pustule, or bleb</i>).</p> <p style="padding-left: 20px;">2. Consecutive (<i>scale, crust, excoriation, fissure, ulcer, or scar</i>).</p> |
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| <p>I. Uniformity, or <i>multiformity</i>.</p> <p>II. Arrangement.</p> <ol style="list-style-type: none"> 1. Isolated 2. Grouped. 3. Discrete. 4. Coalescing. 5. Irregular. <p>III. Definition. (<i>Sharp, fair, poor, or none.</i>)</p> <p>IV. Elevation, or <i>depression</i>.</p> <p>V. Color.</p> <ol style="list-style-type: none"> 1. Under pressure. <p>VI. Shape.</p> <ol style="list-style-type: none"> 1. Apex. 2. Base. <p>VII. Size.</p> <ol style="list-style-type: none"> 1. Superficial. 2. Deep. <p>VIII. Anatomical site.</p> | <p>IX. Consistence.</p> <ol style="list-style-type: none"> 1. Firm. 2. Soft. <p>X. Base.</p> <ol style="list-style-type: none"> 1. Color. 2. Infiltration. <p>XI. Evolution.</p> <ol style="list-style-type: none"> 1. From sound skin. 2. From other lesions. <p>XII. Career.</p> <ol style="list-style-type: none"> 1. Transitory. 2. Persistent. 3. Type. <ol style="list-style-type: none"> a. Simple. b. Changing. c. Modified. <p>XIII. Involution.</p> <ol style="list-style-type: none"> 1. Resorption. 2. Exfoliation. 3. Ulceration. 4. Atrophy, etc. <p>XIV. Sequelæ.</p> <ol style="list-style-type: none"> 1. Stains. 2. Scars. |
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SPECIAL FEATURES TO BE OBSERVED IN CERTAIN LESIONS.

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| <p>A. VESICLES, PUSTULES, OR BLEBS.</p> <p>I. Roof.</p> <ol style="list-style-type: none"> 1. Tense. 2. Flaccid. 3. Easily ruptured. <p>II. Contents.</p> <ol style="list-style-type: none"> 1. Translucent, or <i>opaque</i>. 2. Serous. 3. Purulent. 4. Hemorrhagic. <p>III. Surface beneath.</p> <p>IV. Areola.</p> <p>V. Involution.</p> <ol style="list-style-type: none"> 1. Desiccation. 2. Rupture. 3. Crusts. <p>B. SCALES.</p> <p>I. Size.</p> <p>II. Color.</p> <p>III. Quantity.</p> <p>IV. Consistence.</p> <ol style="list-style-type: none"> 1. Dry. 2. Fatty. 3. Friable. 4. Tough. <p>V. Attachment.</p> <ol style="list-style-type: none"> 1. Firm. 2. Slight. <p>VI. Surface beneath.</p> <ol style="list-style-type: none"> 1. Color. 2. Dry. 3. Greasy. 4. Hemorrhagic. <p>C. CRUSTS.</p> <p>I. Size.</p> <p>II. Shape.</p> <p>III. Color.</p> <p>IV. Composition.</p> <ol style="list-style-type: none"> 1. Serum. 2. Pus. 3. Blood. <p>V. Attachment.</p> <p>VI. Thickness.</p> | <p>VII. Consistence.</p> <p>VIII. Surface beneath.</p> <p>D. EXCORIATIONS.</p> <p>I. Distribution.</p> <p>II. Shape.</p> <p>III. Arrangement.</p> <p>IV. Relation to other lesions.</p> <p>V. Exudation.</p> <p>E. FISSURES.</p> <p>I. Distribution.</p> <p>II. Size.</p> <ol style="list-style-type: none"> 1. Length. 2. Depth. <p>III. Pain.</p> <p>IV. Moisture.</p> <p>F. ULCERS.</p> <p>I. Size.</p> <p>II. Shape.</p> <p>III. Depth.</p> <p>IV. Base.</p> <ol style="list-style-type: none"> 1. Soft. 2. Infiltrated. 3. Indurated. <p>V. Edges.</p> <ol style="list-style-type: none"> 1. Sloping. 2. Perpendicular. 3. Punched. 4. Ragged. 5. Everted. 6. Undermined. 7. Soft. 8. Indurated. <p>VI. Floor.</p> <ol style="list-style-type: none"> 1. Smooth. 2. Uneven. 3. Clean. 4. Pus-covered. 5. Granular. 6. Sloughing. 7. Hemorrhagic. 8. Glazed. |
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- VII. Secretion.
1. Scanty.
2. Profuse.
3. Serous.
4. Purulent.
5. Hemorrhagic.
6. Odor.
- VIII. Pain.
- IX. Crust.
- X. Evolution.
- XI. Duration.
- XII. Involution.
*(Note carefully the number and location
of ulcers, the age of the patient, and the
character of scars if present.)*
- G. SCARS.
- I. Size.
- II. Shape.
- III. Color.
- IV. Depression, or elevation.
- V. Texture.
1. Soft, pliable.
2. Hard, indurated.
3. Thin.
4. Thick.
5. Smooth.
6. Rough, corded.
- VI. Attachment.
- VII. Deformity.
- VIII. Subjective sensation.
- IX. Absence or presence of hairs, glands,
and papillæ.

VI. GENERAL PROGNOSIS.

THE prognosis of most diseases of the human body is formulated with a view to the decision of the serious question of life or death. Occasionally this question arises in connection with skin-diseases. Many of the latter are trivial, some are grave, a few are inevitably fatal in their termination. Thus, general exfoliative dermatitis, leprosy, sarcoma, carcinoma, at times lichen ruber, and variola in the unprotected are of grave portent; while the ordinary congestions and exudations, the great majority of all cases of acquired syphilis in adults, and the entirely curable diseases induced by parasites do not excite alarm in the breast of the average patient with respect to his longevity.

The questions, however, as to his future, which are urgently pressed by the victim of cutaneous disease, are both numerous and important. He is anxious as to the time during which he must suffer; as to the possibility of conveying the disease to his progeny or other members of his family; as to the disfigurement of his person that may result; as to the scars which he may carry for the remainder of his life; as to the possible recurrences of his malady in the future. The responses to these questions will largely be influenced by the prognosis of the physician.

Some diseases of the skin are acute, pursue a rapid course, and are prompt to disappear. Others are chronic, rebellious to treatment of the most energetic and skilful character. Others, again, though not shortening life, are never relieved while life is continued. Some disappear only to reappear at more or less regular intervals. There are cutaneous diseases which affect one individual but once in his lifetime; others which reappear at the instant the patient is again exposed to their exciting cause. There are cutaneous diseases so distorting and destructive in their effects that their victims have committed suicide under the influence of the morbid emotions which they have as a consequence experienced.

The mental distress occasioned by even an insignificant cutaneous disorder is often out of all proportion to its exciting cause, and this should always be regarded in establishing a prognosis. The sexual hypochondriac has been made insane by an acne; and the man or woman affected with syphilis has been made wretched for years by a recurrent erythema.

Again, a disease of the skin may coexist with grave lesions of internal organs, and the prognosis of the disease of the one be greatly influenced by that demanded by the other; thus, there is occasional coexistence of syphilis and phthisis. Pruritus may be associated with

albuminuria ; and the eczema of an infant starving for want of breast-milk may hasten its marasmus to a fatal termination.

Upon the answers given to his patient inquiring as to the prognosis of the disease of the latter will largely depend the professional success of the physician. Scrupulous honesty should here be welded with all the skill that science can command. That a disease does not endanger life is not an argument in favor of its amenability to treatment. The practitioner should never suffer himself to be pushed by his patient to the position that an obstinate disease is readily manageable. It is the height of folly to estimate lightly that zoster of the forehead, the scars of which the patient may exhibit to all who afterward look upon his face both in life and in death. He who engages to relieve an alopecia areata in the month may have a year in which to repent his precipitancy. There is no way in which the conscientious physician can so readily secure the confidence of his patient, and with it that willingness to submit to appropriate treatment which is begotten of such confidence, as by demonstrating his ability to forecast the future of a disease ; in other words, to describe accurately its prognosis.

VII. GENERAL THERAPEUTICS.

A CONSIDERATION of the subject of the methods of treating skin-diseases in general suggests at once the intimate relation which subsists between the integument and other organs of the body. The etiology of one largely explains the causes of the disease in all. The pathological processes in each are subordinated to the same general laws. The principles of treatment are very similar in all the disorders of the body.

The object to be attained by treating a cutaneous disease is, first, its complete relief; secondly, where relief is impossible, such management of the morbid process as will mitigate its severity and render the victim of the disease more comfortable. A higher and more scientific achievement than either is the prophylaxis by which man is enabled to escape the disease altogether. He can by his wisdom largely diminish the danger to which his integument is exposed; he can, to a certain extent, shelter himself from extremes of temperature, traumatism, toxic agents, and contagious diseases; he can, by observing the simple rules of hygiene, fortify his skin against the lesser evils which may befall it. Here, however, the subject under consideration involves disease which is actually present and in progress.

The management of diseases of the skin demands of the practitioner a sound knowledge of general medicine and an experience in disorders other than those of the integument. Dermatology is a branch of general medicine, and he who would succeed in the one department must at least be at home in the other. He who cannot succeed in the one field will almost surely fail to secure the best results in the other. Much indeed of the management of diseases of the skin can be correctly described as the pure practice of medicine. Many of the methods, most of the means of diagnosis, much of the pharmaceutical aid utilized by the general practitioner, are indispensable in the field of dermatology.

It is scarcely needful to set it down at this date that the old doctrines respecting both the danger of "driving in" certain diseases of the skin, and of the importance of "driving out" others, are relics of a superstitious ignorance. There is no disease of the skin the continuance of which offers a bar to other disorders or furnishes a guarantee of the future health of the patient. There is no disease of the skin which does not call for relief as promptly as the requirements and safeguards of science will permit. The retrocession of the exanthematous symptoms of a systemic poison are not of the class of involution of lesions to which attention is here directed.

In beginning the treatment of disorders of the skin it is scarcely

necessary to repeat that the diagnosis should be established by the methods already detailed; and that in attempting to adjust remedies to the morbid state due attention must be given to the past history of the complaint, to its remote or immediate causes, to its duration, to the nature of the disease (whether the latter has changed in type or severity since the beginning), and in particular to the special features presented at the moment of instituting treatment. The matter of diet is one with respect to which experts are not as yet upon all points agreed. In general it may be said that in all inflammatory affections the diet should include food which is simple, digestible, and free from excess of nitrogenous and hydrocarbonaceous principles. The diet appropriate for the gouty state in the majority of gouty patients suffering from dermatoses must be rigidly enforced, even admitting that too severe a regimen is to be deprecated for the gouty when not actually suffering from a crisis of the disease. In all attacks of urticaria the food permitted should be made to correspond carefully with the list of articles known to be incapable of aggravating the disorder, and too much importance cannot be attributed to the regulation of the food of infants and children affected especially with eczema. In glycosuric xanthoma, in the pruritus of albuminuria, in the tuberculoses of the skin, in acne cachecticorum, and in other disorders the selection of a dietary appropriate to the systemic state is of vital importance. On the other hand, it is to be conceded that in some cutaneous maladies, such as vitiligo, the disorders due to vegetable and animal parasites, in molluscum, and in other affections which might be named, the subject of dietetics is without importance.

Like all other diseases of the body, those of the skin may be divided into three classes with relatively fixed limits.

The first class embraces all the diseases which have a natural tendency to pursue their course to a favorable termination. It includes all those affections which, either mild or severe, require absolutely no treatment of an active character. It is the duty of the skilful physician to watch the evolution of these maladies, and to discharge a most important part by refraining from all therapeutic measures which in such cases might prove hurtful. By his judicious counsel, also, he hinders patients and their friends from pursuing a course which might prove prejudicial to the disease.

The second class embraces all those skin-affections which are either inevitably fatal or hopelessly remediless while life is prolonged. Fortunately, this includes but a small proportion of the large list. Here the duty of the physician is plain. He should assuage pain, attempt to relieve deformity, administer to the comfort of the afflicted in other ways, and by his patient courage inspire confidence and hope. It must not be forgotten that the skill of man has not yet reached the acme of human need. In the presence of many diseases of the body he stands absolutely helpless, and the speediest way to success in such cases is to begin by an honest admission of the plain fact.

The third class of affections naturally embraces all not included in the first two classes. Here disease may be prolonged or be shortened in its course, rendered acute or chronic, made more or less endurable,

permitted to become inveterate, or absolutely be relieved by prompt and energetic measures, according as it is, or is not, judiciously and skilfully managed. Here are gained the most brilliant successes of the dermatologist ; here also occur his most humiliating failures.

In the presence of a cutaneous disease which requires treatment the question naturally arises as to whether this treatment shall be *internal*—that is, by medicaments ingested ; or *external*—that is, by local therapeutics ; or by combination of the two methods at the same time.

INTERNAL TREATMENT.

With regard to the question of internal treatment, which is one of pressing importance, it can safely be said that there are no remedies to be given by the mouth that can be described as certainly and specifically curative of the diseases of the skin. The number of medicinal agents employed with this end in view is incredibly large, by far the greater part being obtained from the vegetable kingdom. With few exceptions, some of which are enumerated below, the most esteemed of these agents exert only an indirect therapeutic effect upon the integument. The larger number of medicaments thus used are, it must be admitted, without value of any kind, but will probably continue to be vaunted as possessing specific virtue so long as credulity on the one hand, and avarice on the other hand, move the mass of mankind.

Arsenic has long stood at the head of the list of remedies as valuable, when ingested, for the relief of cutaneous disorders. It is known to exert its effects almost exclusively upon the epithelia of the skin, and upon these, so far as therapeutic effects are concerned, only when they are the seat of subacute and chronic exudation. It is known to exert an unfavorable influence upon the epidermis when the latter is in a condition of active inflammation, and if given for long periods of time may produce pigmentation of the skin of the general surface of the body and keratosis of the palms and soles. Operating favorably in this limited class of cases, it also operates slowly, requiring months for the production of its curative effects. Its administration is at all times attended with the hazard of producing toxic effects, which, however, when the result of the exhibition of the drug in medicinal doses are usually limited to a mild exanthem upon the skin, moderate coryza, and some redness from congestion of the vessels in the eyes and eyelids.

Arsenic is used chiefly in psoriasis, acne, squamous eczema, pemphigus, and lichen ruber its doses in cases of children being relatively large. It should invariably be administered only after eating, and a minimum dose be first employed in order to test the susceptibility of the patient to its action. It should be remembered that the toxic effect of this, as also of several of the other drugs mentioned below, is often speedily noticed after the first exhibition of a relatively small dose. Toleration once established, the dosage may be cautiously increased.

The forms in which arsenic is usually administered are : the preparations of arsenious acid, such as the popular tablet-triturates made up in different and most commonly administered doses ; the liquor po-

tassii arsenitis (Fowler's solution); the liquor arsenici et hydrargyri iodidi (Donovan's solution); the liquor arsenici chloridi (de Valangin's solution); and the Asiatic pill. Duhring's modification of this pill is obtained by making 2 grains (0.13) of arsenious acid, and 32 grains (2.2) each of black pepper and licorice powder into thirty-two pills by the aid of a sufficient quantity of gum Arabic and water. Arsenic is also at times advantageously combined with other indicated medicinal substances, such as iron and potassium iodide.

An unprejudiced view of the value of arsenic, even in cases properly selected for its internal administration, justifies the conclusion that it is in diseases of the skin a remedy of uncertain effect, and in that proportion disappointing. After collation of the experience of experts it has been shown that the common practice of giving arsenic in many cutaneous diseases is both harmful and irrational, not merely because of its effect in inducing cutaneous congestion and pruritus, but also because of the reliance placed upon it to the exclusion of other and better methods of treatment; and that the beneficial effects supposed to follow its administration are often due to other causes. No series of carefully recorded cases has ever been published in which notable therapeutical results have been shown to result solely from its administration. Even in pemphigus, psoriasis, chronic eczema, and lichen ruber, in which arsenic has been thought to possess special efficacy, it has in cases conspicuously failed.

It is safest to conclude, first, that arsenic, instead of being one of the earliest, should be one of the last remedies to be selected in the management of cutaneous diseases by the general practitioner; secondly, that, when thus selected, its value will probably prove greatest if the eruptive lesions be seated superficially, be generalized, diffused, or in evident association with neurotic symptoms; thirdly, that in any case its failure to relieve should not be regarded as definite, if only Fowler's solution has been administered.

Mercury is a remedy of the greatest value in cutaneous as in other affections. Its specific action upon the liver and intestinal secretions calls for its employment in many cases in which intestinal elimination is deficient, in which there is habitual constipation, and in which there is a decided tendency to congestion of the blood-vessels of the head, of the anogenital region, and even of the lower extremities. In all of the distinctly gouty dermatoses, in all eczemas of the florid-faced type of patients, in many cases of intense pruritus resulting from toxic influences, and in almost all the eczemas of infancy and childhood, calomel, blue pill, and the gray powder are well nigh indispensable in securing the speediest and happiest results. Indeed, there are few adult patients seeking relief from a simple inflammatory affection of the skin and having at the same time a coated tongue, an offensive breath, and a loaded colon, who will not be benefited at the outset of treatment by free catharsis under the influence of a mercurial. In many cases indeed of aggravated types of engorgement of the skin, localized or generalized, a dose of blue mass may be given at night, on successive nights, or for a fortnight or more, and followed by a saline laxative in the morning, with the best effect upon the exanthem present.

Mercury in the treatment of syphilodermata is of incontestable value, and its injudicious employment in many cases springs from that precise fact. The vulgar prejudice that many disorders of the skin, really not syphilitic, are obscure manifestations of lues in a preceding generation and amenable to mercurial treatment, is a striking illustration of the necessity of accurate diagnosis in cutaneous diseases. When syphilodermata are present corrosive sublimate is often superseded, in consequence of its irritative effects, by the compounds of the metal with iodine. The gray powder is useful chiefly in case of infants and children, though its not infrequent development of the corrosive chloride has limited its employment. Calomel and the mercurial pill should be employed only for transient effect, as when administered for long periods they are much more than the other preparations mentioned likely to produce pytalism.

Iodine and its compounds are also chiefly used in syphilitic disorders of the skin, but they possess a wider range of value than the mercurials in the treatment of other cutaneous affections. Here, too, the abuse of the drug furnishes a long list of cutaneous disorders either originated or aggravated by its employment. As in the use of arsenic, toleration should be established before large doses are exhibited. The compounds chiefly used are the iodides of potassium, sodium, lithium, and ammonium; and iodoform. Iodine has been administered for the relief of the scrofulodermata, lupus, keloid, psoriasis, and syphilitic affections of the skin. As to the latter, it may be added that in the earlier symptoms of lues it is often a source of positive injury.

Cod-liver Oil is a remedy of special value in diseases of the skin, and was for that reason held in high favor by the distinguished Hebra, though its action is almost exclusively that of a nutrient of the general system. It is employed chiefly for its roborant effects, which are similar to those of the digestible aliments. Its special value in the treatment of infants and children affected with cutaneous diseases cannot be questioned. It is, moreover, of great use in maturer years, and is advantageously exhibited in eczema, lupus, scrofula, syphilis, scleroderma, and in all disorders of the integument accompanied by wasting.

Cathartics, Alkalies, and Diuretics have an important place in the list of remedies valuable in the management of skin-affections. Cathartics are chiefly valuable in eliminating effete or toxic products, but they are effective also in reducing congestion of the body-surface. The value of mercurials in this connection has been already suggested. The saline laxatives and cathartics also are of great service, especially the magnesian and sodic sulphates, and the Rochelle, Carlsprudel, and Hunyadi János salts. The useful and frequently ordered *mistura ferri acida* is compounded as follows:

R	Magnes. sulphat.,	℥jss;	45	
	Acid. sulph. arom. (vel dilut.),	℥j;	4	
	Ferri sulphat.,	gr. viij;	50	
	Aq. menth. piper.,	ad ℥iv;	120	M. (filtra).

Sig. A tablespoonful in hot or cold water before breakfast daily.

The alkalies are extremely useful in all cases of gouty disorder, and in erythema, acne, and certain forms of eczema. The carbonates of sodium, potassium, and lithium are chiefly employed, as well as the liquor potassæ. The prevalent misconception of the value of lithium carbonate and other salts of the same base has produced a reaction which suggests a preference of one of the other alkalies when such are indicated. Diuretics, with the exception of water, are less valuable in cutaneous than in other affections, but they yet are administered often with special advantage in inflammatory disorders.

Water when drunk in sufficient quantities and at proper times is of great value as a diuretic and as an aid to elimination. Soft water is to be preferred, and should be drunk freely at all times except during meals and for an hour after eating. The best results are obtained by drinking a given amount (four to eight, or more, ounces) every hour. As such a course is usually impracticable outside of hospitals and health-resorts, under ordinary circumstances two or three glasses may be ordered to be taken on rising in the morning and before meals. The free use of water, especially if iced, with meals is a fruitful source of indigestion as a consequence of the chilling and large dilution of the stomach-contents. The vicious habits of rapid eating and imperfect mastication of food may often be corrected by simply abstaining from the drinking of liquids during the taking of food.

Quinine, administered both as a tonic and an antiperiodic, is largely employed in cutaneous medicine for its generally recognized systemic effects. It produces, in susceptible individuals, a peculiar smoothness and softness of the skin, which usually disappear when the drug is suspended. Like arsenic and iodine, it is occasionally the cause of a generalized exanthem, and is capable of producing other toxic effects, such as failure of the heart's action, dizziness, and tinnitus aurium, symptoms recognized under the designation of *cinchonism*. It will, of course, exhibit its happiest effects in malarial affections with coincidence of cutaneous symptoms in the form of disease of the skin associated with a neurosis.

Salol is a remedy of special value in many cutaneous disorders associated with intestinal sepsis. It is particularly useful in the forms of pustular acne when the subject of the affection has an habitually coated tongue, a foul breath, and defective digestion.

Ergot and **Ergotine**, whether by exerting an effect upon the muscle-bundles or the vessels of the derma, or upon the uterus, or yet by its influence upon the general economy, is thought to possess some value in the treatment of several cutaneous diseases occurring in both sexes. Such are acne, purpura, and a few other disorders.

Calx Sulphurata was once regarded as the most efficient of the sulphur compounds for internal use in cutaneous diseases. Its supposed value in furunculosis has led to its employment also in eczema, acne, and impetigo. It is given in doses of from $\frac{1}{10}$ (0.004) to $\frac{1}{4}$ (0.016) of a grain, three or four times daily. It is, however, a remedy uncertain in operation and of dubious effect.

Chrysarobin has been administered internally by Stocquart¹ and

¹ Ann. de Derm. et de Syph., 1884.

others, in doses of $\frac{1}{6}$ (0.01) of a grain, for a number of cutaneous disorders.

Ichthyol, mentioned later as of some value when externally employed, has also been given by the mouth.

Jaborandi and **Pilocarpine**, probably as a result of the free diaphoresis which they excite, unquestionably exert immediate therapeutic effects in a number of cutaneous disorders.

Sulphur, highly esteemed as a popular remedy in cutaneous affections, exerts but little influence upon the latter when it is ingested. Its cathartic effect is the chief reason for its administration. It is recommended by Crocker in some of the disorders of the sweat-function.

Antimony in small doses is of unquestioned value in many diseases of the skin. It is, when not contraindicated, employed with advantage in psoriasis, pruritus, and some of the obstinate forms of eczema.

Tar, **Carbolic Acid**, **Creosote**, **Guaiacol**, **Resorcin**, **Turpentine**, **Copaiba**, and **Phosphorus** are remedies which have been employed internally with appreciable effect in certain cutaneous maladies. They have been used with advantage in cases of lupus, eczema, psoriasis, and pruritus; but the disagreeable effect of their internal administration has been to a great degree a bar to their general employment. The "perles" of phosphorus and the elixirs of the same drug obviate this difficulty in the instance of at least one of these articles. Creosote carbonate given in capsules is usually well tolerated.

Animal Extracts, **Thyroid Extract**, and other preparations of the thyroid, adrenal, and other glands of the larger mammals, have in recent years been employed largely in various diseases of the skin. In myx-œdema decided and brilliant results have been obtained, and the same is true of ichthyosis, psoriasis, and some tuberculous affections of the skin. The depressing action of thyroid-extract on the heart makes it an unsafe remedy to use except with great care.

Maltine, and other preparations of malt alone or in the valuable combinations now on sale, are of marked value in promoting the nutrition of the skin. They are especially indicated where there is imperfect digestion of the carbohydrates, and where fats are not readily assimilated. They are useful in acne, in scleroderma, in syphilis, in tuberculosis of the skin, and in many of the cachexias accompanied by cutaneous symptoms.

Iron and its several compounds are invaluable in the management of a long list of cutaneous disorders. Iron is indicated in many cases of cachexia and struma; in tuberculosis of the skin; in syphilis; in all the anæmias; and in many cases of purpura and pemphigus. Fortunately, iron is often well assimilated when compounded with other drugs, and hence has been suggested the long list of compounds of iron and mercury and of iron and iodine in syphilis; of iron and quinine and of iron and the vegetable bitters in anorexia and anæmia; and of iron with cathartics in atonic constipation.

The **Analgesics** have occupied a small space in cutaneous medicine, and that space should be more and more restricted. The use of acetanilid, of opium and its alkaloids, of phenacetine, of potassic bromide, of trional, of sulphonal, and of articles of the same class, has been

indicated for relief of the tormenting pruritus, pain, and insomnia accompanying a long list of dermatoses. Unfortunately, most of the preparations devised to insure relief, after a temporary calmative effect have a decidedly aggravating influence upon the exanthem present. To a degree scarcely noticeable in other cases have drug-habits been formed in consequence of the temporary assuagement of the local distress when under the influence of an analgesic. As a rule, the most competent physician is he who secures relief for his patient without narcotizing the nerves which are uttering their protest by abnormal sensation. The expert reserves for the last extremity an ordering of medicines of the anodyne class in attempting to secure relief.

Hypodermatic and Intracutaneous Injections of alcohol, arsenic, mercury, cocaine, carbolic acid, the alkaloids of opium, antitoxins, exalgine, of erysipelas-toxins, and other substances have been largely employed in the management of cutaneous disorders, some with marked success, others with doubtful results. The most brilliant of the achievements in this direction are without question the relief of the syphilodermata by deep intramuscular injections of mercury. The injection of the antitoxins which have been such a boon in an important group of general disorders has, on the whole, proved disappointing in cutaneous medicine. Attention has been directed to the special objections in most of the affections of the skin to the use of anodynes and opiated medicaments by whatever route introduced into the system. The temporary alleviation, when secured, is gained at too great a cost.

Tuberculin (Koch's lymph), **Thiosinamine**, **Taurine**, and yet other substances have been injected subcutaneously in the management of lupus, acne, eczema, psoriasis, lepra, and other affections. They have not as yet such an acceptance at the hands of the profession as would justify their employment in any save specially selected cases.

Spraying the skin for antiseptic purposes is of value, and may be often employed with marked advantage. The several solutions of formalin are best suited to the purpose. Frigorific sprays for the purpose of freezing a part of the skin selected for operation, as in the case of epithelioma, are indispensable to the operator. Those chiefly employed are discharged from bulbs containing ethyl chloride.

Natural Mineral Waters.—The chief value of many of the mineral springs and health-resorts of the United States lies in the change of the manner of living that they invite and necessitate. Sunshine, pure air, recreation after the care and toil of business, change of climate, of foods and drinks, and even of cooks, often decide the question of speedy recovery. Unfortunately, both in America and in Europe, many of the health-resorts are peopled by unscrupulous charlatans, with a tendency to attribute all the benefits to be derived from these sources to the medicinal virtues of this or that particular spring, aided always by treatment according to their own peculiar methods. Many patients affected with disease of the skin are thus made worse by a temporary residence at noted health-resorts, and, therefore, it is often the case that a visit to the seashore, to the mountains, or to any healthful place in the country proves conducive to greater practical results. None the less the springs of America and Europe having mineral con-

stituents, in many instances supply a valuable means of treating cutaneous diseases. The sulphur waters of Richfield Springs, of Sharon Springs, and of Avon Springs, in this country, as of those of Europe, operate chiefly by an influence exerted upon the digestive tract; the springs of West Virginia are examples of calcic waters having for the most part a diuretic effect. The fine water of the Poland Spring in Maine is chiefly valuable by reason of its remarkable purity. The alkaline waters of Colorado Springs, of Saratoga, and of other sources in America are rapidly securing a reputation equal to that of the famous Vichy, Carlsbad, and Ems of Europe.

The chemical laboratories, however, are fast placing at the disposal of the consumer the salts, either natural or artificially produced, which represent the constituents of most of the waters highly esteemed, both here and abroad, in the management of disease. In this way the Apenta, Hunyadi János, Hathorn, Kissengen, Congress, Friedrichshall, Rakoczy, and other waters may be produced at will by solution of the proper salts in water: and the latter in many of our large cities is now furnished after distillation and aëration in such purity that it competes with distilled water in the laboratory of the chemist and in the operations of the photographer.

Of the chalybeate and arsenical waters, the former abundant in Michigan and New York, the latter best represented by that of Levico, in the Austrian Tyrol, it may be said that their use is often followed by excellent results, especially when the drinking of the water is associated with the tonic regimen and healthful environment of the springs from which these waters are obtained.

EXTERNAL TREATMENT.

In the external treatment of diseases of the skin the indications are to hasten repair when this is possible; to alleviate distress if palliatives only are admissible; to destroy absolutely or excise the diseased tissue when this is justifiable. The following are the principal substances employed as external applications:

Water, either pure or medicated by holding substances in solution or mechanical suspension, is applied either in baths or as lotions. Baths, local or general, may be employed for days continuously or but for a few moments at a time. They are given with water varying in temperature—cold, warm, or hot. Rain-water is to be used when practicable.

Cold baths of short duration are generally followed by a sharp reaction, the skin becoming congested after the normal temperature of the surface is regained. It is for this reason that cold sponging of the inflamed skin is usually grateful so long as it is continued, and is succeeded by an aggravation of the symptoms which it was intended to relieve. Continued applications of cold water are not open to this objection.

Hot baths are followed by a more or less enduring relaxation of the integument, while tepid water-baths are chiefly macerative of the surface. Hot baths are valuable in several of the exudative and hyper-

trophic affections of the skin. It should be remembered that the application of watery lotions to the broken surface of the skin is likely to be followed by endosmosis, unless the specific gravity of the serum of the blood and that of the fluid of the bath or the lotion are nearly the same. This imbibition of fluids by the broken skin is accompanied by slight swelling of the tissues and is productive of disagreeable sensations.

The continuous warm water-bath in which the patient is immersed either for the greater part of a day or for a few hours at a time is an exceedingly valuable means of treating pemphigus, the severe grades of burns, and ulcerative affections of the skin.

The most perfect of all applications of water to the surface of the body is that most resembling the water-bath in which the tender skin of the foetus is immersed for consecutive months. Here the bath is continuous; the temperature is that of the viscera of the living animal; and the delicate skin of the unborn child is anointed with a fatty substance which interferes with the macerative action of the surrounding fluid so long as the vitality is preserved at the average standard. The comfort and therapeutic value of a bath prepared and administered in approximation to this ideal can scarcely be overestimated. Were it not for the difficulties with which it is attended, so far as relates to many portions of the surface of the body, it would be possible with this single therapeutic measure to rob the exudative affections of the skin of many of their formidable features.

Vapor, steam, Russian, and Turkish baths are less valuable than is usually supposed in diseases of the skin. The macerative effect they produce is not always desirable. They possess some value in severe general pruritus, in ichthyosis, and in keratosis pilaris.

In acute inflammations of the skin the application of pure water, even when of proper temperature, is often prejudicial to the integument, and soap-and-water washings may prove quite harmful. The greatest caution must be exercised in giving instruction to patients as to the washing of the inflamed skin.

Water for external application, as in the bath, is medicated by the addition of a large number of substances, such as marine salt, boric acid, corrosive sublimate, sodic and potassic salts, alum, tannin, the mineral acids, gum Arabic, gelatin, and bran.*

The alkaline bath, made by adding sodium bicarbonate or biborate to water having the proper temperature in the proportion of 12 ounces of either salt to 30 gallons, is usually grateful to the inflamed skin. Sulphur-baths are best prepared by adding an ounce of Vleminckx's solution¹ to the above-mentioned quantity of water.

The natural **Sulphur-baths** of Richfield Springs and Avon Springs, in this country, are efficacious in certain cutaneous affections accompanied by roughness and thickening of the integument.

¹ The formula is :

R	Calcis,	$\overline{3}$ ss ;	16	
	Sulphur. sublim.,	$\overline{3}$ j ;	32	
	Aq. dest.,	$\overline{3}$ x ;	320	M.
Coque ad $\overline{3}$ vj [200] deinde filtra.				
Sig. "Vleminckx's Solution."				

Tar-baths are usually given by first anointing the skin of the patient with the tarry substance to be employed, and by immersing the body in warm water for some hours afterward. The resulting effect can usually be accomplished as well by other measures.

Salt- and Marine Baths possess the highest value with respect to the general health of the individual; and are advantageously employed over the body-surface when, for example, the head alone is affected with a dermatosis (rosacea, acne, erythema), and when the salt is not brought into contact with the morbid surface. In very many cases a sea- or salt-bath produces aggravation of a cutaneous affection, and indeed, in some cases, is capable of begetting the same. A properly directed salt-bath or lotion, however, is at times positively beneficial, not merely in chronic, but also in acute affections of the skin.

The strength of the usual marine salt-bath is $\frac{1}{4}$ pound to the gallon, though 10 pounds of the salt are often added to 25 gallons of water with advantage. The sea-salt is not preferable to the article obtained from the natural brine-wells of the interior of the country. For invalids the skin of the body may first be well rubbed with the finest table-salt well warmed in an oven, after which a tepid or warm bath may be used to cleanse the surface.

Antiseptic Baths are most often employed by the surgeon. In the management of skin-affections local baths of boric acid in hot or cold water may be employed. The acid is soluble in about 25 parts of cold water. Corrosive-sublimate baths are employed in the strength of 1 drachm (4.) of the mercurial to 30 gallons of water. Local baths thus medicated are often employed in the cleansing of ulcerated and suppurating surfaces with a view to subsequent dressing.

When employed as a lotion, water is made to produce a sedative effect by the addition of opium, belladonna, glycerin, carbolic acid, hydrocyanic acid, zinc, bismuth, mercury, lead, and alkaline bicarbonates with the sodic biborate. It is rendered stimulating by the admixture of alcohol, most of the acids and alkalies in stronger solution than in the soothing or sedative lotions, and also by a large number of substances which operate upon the surface either mechanically or chemically. Water is also rendered astringent when tannin, lead, and similar medicaments are dissolved in it; and by its union in various proportions with soaps and alkalies a solvent effect is produced, either upon the cuticle itself or upon pathological or foreign products upon its surface.

Soaps.—Soft soap (*sapo viridis*, *sapo mollis*) made by the addition of caustic potash in an excess of between 3 and 4 per cent. to an animal fat, is a substance exceedingly useful in the treatment of skin-diseases. It is used for the purpose of producing either a deterative or stimulating, and at times a slightly destructive effect either upon the surface of the skin itself or upon pathological accumulations upon the surface (crusts, scales, etc.). It may be used as a plaster or with water: and this last either in substance or by the aid of the widely known "*Spiritus Saponis Alkalinus*" which Hebra first devised: 2 ounces of green soap to 1 ounce of alcohol, flavored with spirit of lavender. The hard or soda soaps are employed chiefly for toilet purposes.

“Over-fatty” or “superfatted” soaps, both soda and potash soaps, are neither alkaline nor neutral in reaction, but contain a slight excess of unsaponified fat. They are exceedingly mild in their deterative action upon the skin, though the lather produced in their use is not so abundant as that with the alkaline soaps. These are usually proprietary articles.

MEDICATED SOAPS, containing carbolic acid, glycerin, tar, sulphur, and various oils, are sold in the shops; but they usually contain so small a portion of the individual medicament from which each is named that they are practically worthless except for purposes of ablution. Under cold pressure they may be made to contain medicinal substances in therapeutic proportions, but other forms of administration of such medicaments are preferable.

Fatty and Oily Substances are applied to the skin either directly by pouring, or by friction, or by the mediation of compresses, bandages, etc., which are saturated or are spread with the material to be applied. The oils may be used for either nutritive, soothing, or stimulating effects. To the first and second classes belong cod-liver, lard, olive-, almond-, linseed-, neat’s-foot, castor-, and similar oils; to the third class belong the oil of tar, of cade, of white birch, of the cashew-nut, and of juniper.

Fatty substances are also applied in the form of ointments or pomades. They are compounded with various medicinal substances, according to the requirements of each case, such as the salts of mercury, zinc, copper, lead, and sulphur; pyrogallol, chrysarobin, carbolic and hyposulphurous acids; tar, camphor, iodoform, balsam of Peru, chloral hydrate, and the extracts of opium, belladonna, etc.

The products of petroleum refinement known as **VASELIN** and **COSMOLIN**, though not true fats, are increasingly employed for similar purposes, and continue to enjoy high favor in America and in Europe. They are particularly useful as bases for ointments for application to the hairy portions of the body, such as the scalp, where more consistent salves paste the hair to the surface in an unsightly mass.

In the class of soothing ointments which are required in many cases in which the skin is the seat of a severe pruritus or is productive of burning sensations, may be named the diachylon, benzoinated zinc-oxide, “cold-cream,” lanolin, cucumber, petroleum, diachylon, spermaceti, cacao-butter, and olive-oil with vaselin ointments. Those medicated with the several oleates and with the salts of bismuth, zinc, or lead, are often of great value. As a rule, however, in most cases calling urgently for soothing applications fat-containing dressings are not to be preferred to lotions or dusting-powders, or the two last named in combination. Ointments are rubbed gently over the affected surface, but they are more efficient when spread on bits of soft muslin and kept in contact with the skin.

McCall Anderson’s ointment has long been employed for soothing inflamed surfaces. It is compounded by adding 1 drachm of bismuth oxide (4.) to 1 ounce (30.) of oleic acid, 3 drachms (12.) of white wax, 9 (36.) of vaselin, and a few minims of the oil of roses. 10 parts of lanolin, with 20 of lard and 30 of rose-water, make another useful

combination. Many of these ointments in the past have been found to be irritating on account of the fatty acids which they develop, especially in hot weather. They may now all be kept perfectly sweet by the addition of a small quantity of formalin to each jar compounded.

The following formulæ are also useful: Boric acid, white wax, and paraffin, each 10 parts; oil of sweet almonds, 60 parts (H. Hebra). Bismuth oxide, 1 drachm (4.); white wax, 6 drachms (24.); vaselin and olive-oil, of each 1 ounce (30.). Boric acid, 1 part; glycerin, 24 parts; anhydrous lanolin, 5 parts; vaselin, 70 parts (Duhring's "boroglycerin cream ointment"). Other fatty applications are prepared by adding olive-, sweet-almond, or cotton-seed oil, as well as lard and lanolin, to lime-water in nearly equal proportions. These furnish a thick emulsified substance which requires to be well shaken before application. Any one of these emulsions may be medicated at will by the addition of zinc, bismuth, calamine, or other insoluble substance which is mechanically mixed with the fatty emulsion when the whole is well shaken.

Stimulating ointments are usually made by the addition of such substances as tar, mercury, resorcin, salicylic acid, pyrogallie acid, chrysarobin, or sulphur to any one of the several salve-bases in common use.

Glycerin, even the best, when applied in its purity to the skin is usually irritating. It is, however, exceedingly useful when diluted or made a component part of lotions and ointments. When combined with starch in different proportions it makes a series of combinations known as *glyceroles*, or *glycerolates*. These combinations are pasty, semisolid substances which are capable of varied medication, as in the glycerole of lead subacetate. They are useful chiefly as protectives of the skin-surface. Glycerin, used in a fluid soap, is an exceedingly valuable agent when a milder effect is desired than that produced by the spirit of soap described above. The Vienna preparation known as Sarg's fluid soap is an admirable substitute of this sort when a soft shampoo is required for the scalp.

Pastes employed for local application in diseases of the skin have greatly been perfected by Lassar and Unna.¹

These pastes are valuable especially in the exudative affections, in which salves are often either not well tolerated or actually prove irritating to the skin. The pastes, when applied to such surfaces, form a protective and adhesive dressing, which may be medicated as desired. One of the best and most serviceable pastes is:

R	Zinc. stearat. cum acetanilid.,	}	āā ʒij.	8	M.
	Ol. oliv.,				
	Unguent. aq. ros.,				

Or the following modification of Lassar's paste:

R	Zinci oxidi, }	āā ʒij;	8		
	Talc., }				
	Acid. salicylic.,	gr. x;		66	M.
	Vaselin.,	ʒss;	16		

¹ Monatsch. f. prakt. Derm., February and March, 1884.

Equal parts of lanolin, vaselin, talc, and zinc oxide form a base that is stiffer than the preceding and adheres better. To these bases may be added various remedies in desired proportions.

Duhring's modification of the original Lassar paste is : boric acid, ʒj (1.); starch and zinc oxide, each ʒij (8.); vaselin, ʒj (33.). Unna employs : starch, 3 parts ; glycerin, 2 parts ; water, 15 parts ; boiled down to 15 parts. Half the quantity of any desired medicament may be added to the amount ordered. Paraffin may be added in the making of very stiff pastes in the proportion of equal parts of this substance and water ; twice the quantity of lanolin ; and about $\frac{1}{25}$ of white wax.

Other pastes are prepared with kaolin (terra alba, or Armenian bole of red color when it is desirable to have the application resemble the color of the skin), gum, lead, dextrin, glycerin, and other substances. Formulæ for each are here appended.

Kaolin in a pure state, with equal parts of vaselin or glycerin, or with almond-, olive-, or linseed-oil, in the proportion of two to one, is readily applied in a thin layer over the skin.

For making lead-pastes, litharge is boiled with twice the quantity of vinegar until the latter has evaporated and there is left a damp but drying paste, which may be, on occasion, remoistened with a small quantity of vinegar, *e. g.* :

R	Lithargyr. subt. pulv.,	ʒjss ;	45
	Aceti,	ʒijss ;	75

Coque usque ad consistent. pastæ: deinde adde ol. lini [v. glycerini, v. ol. olivæ], 10.—M.

In the two forms of paste above described the adhesive and desiccative qualities are obtained from the main ingredients, but in those resulting from combinations of gum, starch, and dextrin these results are for the most part obtained by the addition of other ingredients, such as sulphur, zinc, etc. A good basis, semisolid, rapidly drying, and fixing its ingredients well upon the surface, is the following:

R	Zinci oxidi,	ʒjss ;	45
	Acid. salicylic.,	ʒss ;	2
	Amyli oryzæ,	āā ʒijj ;	12
	Glycerini,		
	Aq. dest.,		
	Coque ad., ʒivss (145).	ʒijss ;	75

For a sulphur-paste :

R	Sulphur. præcipit.,	ʒjss ;	45
	Calc. carb.,	ʒss ;	2
	Zinc. oxid.,	ʒss ;	15
	Amyli oryzæ,	ʒijj ;	12
	Glycerini,	ʒss ;	15
	Aq. dest.,	ʒijss ;	75
	Coque ad., ʒiv (120).		

To make use of dextrin, the official pulverized article is selected, and a simple paste of this forms a good drying base. An added half-

weight of glycerin is required if powders are also combined with the paste—*e. g.*:

R	Zinc. oxid.,	$\bar{3}$ jss;	45
	Dextrin.,		
	Aq. dest.,	$\bar{a}\bar{a}$ $\bar{3}$ ss;	15
	Glycerin.,	$\bar{3}$ jss;	45
	Sulphur. sublim. [vel sod.]	$\bar{3}$ ss;	2
	sulpho-ichthyol.,		
	Coque.		

A mixture of dextrin and lead is thus prepared :

R	Lithargyr.,	$\bar{3}$ j;	30
	Acet.,	$\bar{3}$ jss;	45
	Coque ad remanent., 50.		
	Adde:		
	Dextrin.,		
	Aq. dest.,	$\bar{a}\bar{a}$ $\bar{3}$ ss;	15
	Glycerin.,		
	Coque.		

If too consistent, these pastes are made to spread easily by the addition of a few drops of hot water.

For gum-pastes, gum Arabic is used in the proportion of 1 part of the mucilage and glycerin to 2 parts of the powder selected, mixed without heat—*e. g.*:

R	Zinc. oxid.,	$\bar{3}$ jss;	45
	Hydrarg oxid. rub.,	$\bar{3}$ ss;	2
	Mucilag. acac.,	$\bar{a}\bar{a}$ $\bar{3}$ ss;	15
	Glycerin.,		M.
R	Cret. præparat.,		
	Sulphur. sublim.,	$\bar{a}\bar{a}$ $\bar{3}$ ss;	2
	Picis liquid.,	$\bar{3}$ ij;	8
	Amyli,	$\bar{3}$ ss;	15
	Mucilag. acac.,	$\bar{a}\bar{a}$ $\bar{3}$ ss;	15
	Glycerin.,		M.
R	Acid. salicylic.,	$\bar{3}$ ss;	15
	Glycerin.,	$\bar{3}$ ss;	15
	Mucilag. acac.,	$\bar{3}$ j;	30
	Ol. ricini,	$\bar{3}$ ijss;	10
			M.

The following details are to be noted respecting the availability of these pastes for different ingredients: Lead is best used as an acetate, either in a simple paste or with dextrin, the carbonate, oleate, and iodide combining well with both. Zinc oxide and sulphur combine well with kaolin, lead, starch, dextrin, and gum. Sulphur combines well with the three last named, poorly with kaolin, and not at all with lead. Ichthyol suits well with all save the gum-pastes. Naphтол, calomel, corrosive sublimate, red and white precipitates, carbolic acid, chloral hydrate, camphor, and salicylic acid can be incorporated with all, the last named in smaller proportion with gum-paste. Tar is better united with starch, dextrin, and gum than with the others. Iodine and iodo-

form naturally do not suit well with the starch- and dextrin-pastes. Chrysarobin and pyrogallol are united with kaolin and gum-pastes, and should not be added to them. Fatty and soapy substances, if commingled in large amounts with these pastes, injure their special properties.

Glycogelatins are useful for protecting a surface and excluding the air. They are made with varying proportions of glycerin, gelatin, zinc oxide, and water. When cold they are solid, but when melted on a water-bath can be painted readily over a surface, upon which on cooling they form an adherent protective coating. Before the gelatin has hardened on the skin it is well to pat it with cotton, or to lay over it a piece of thin gauze or muslin to form an additional protection and to prevent the paste sticking to the clothing. A firm but soft and flexible gelatin is made by mixing on a hot-water bath 1 part of zinc oxide, 2 of gelatin, 3 of glycerin, and 4 of water. More gelatin in the preparation makes it firmer and causes it to dry quicker. A greater proportion of glycerin, on the other hand, interferes with the complete drying of the surface, but makes a softer preparation, more acceptable to some skins and very useful where a bandage can be applied. Zinc oxide helps give body to the gelatin, but if used in too large proportion interferes with the coherence of the preparation, so that it cracks when dry. To the glycogelatins may be added white precipitate, sulphur, ichthyol, thiol, chrysarobin, iodoform, or other antiseptics. Some drugs, as salicylic acid, resorcin, naphthol, and carbolic acid, tend to destroy the coherence of the gelatin. Fox says that this obstacle may be removed by adding to the paste 5 or 10 per cent. of fresh lard.

Varnishes, containing glycerin and a single gum, are often very serviceable in protecting the skin. They are especially useful on the face, as they are transparent and inconspicuous.

Pick's varnish (*linimentum exsiccans*) is made as follows :

R	Tragacanth,	5 parts.
	Glycerin,	2 "
	Distilled water,	93 "

The tragacanth is soaked in a portion of water from ten to twelve hours and triturated to a perfectly smooth mass before adding the glycerin and other ingredients ordered. The jelly may be prepared without delay by triturating the tragacanth with boiling water, but the result is not quite so good.

This jelly is applied without heating and quickly dries on the skin. An improvement on this varnish is Elliott's bassorin paste, which keeps better than the former. The formula is as follows :

R	Bassorin,	3jss;	45
	Dextrin,	3vj;	24
	Glycerin,	3ijss;	10
	Water to make	3iij;	90

This should be kept in a tightly closed jar, as it dries rapidly on exposure to the air. Like the other pastes, it not only serves as

a protective coating, but also as a base for the application of other remedies.

Powders are mechanically dusted over the surface of the skin for the purpose of protecting it, and occasionally, also, to produce an astringent or antipruritic effect. To be serviceable, they should generally be rendered impalpable by sifting them carefully through a fine silk bolting-cloth. They are composed of starch, talc, magnesia, lycopodium, calamine, bismuth, boric acid, the several stearates, camphor, tannin, zinc oxide, iodoform, rice, kaolin, magnesium silicate, orris root, salicylic acid, aristol, eucrophen, and similar substances. The articles sold by grocers as "gloss starch" and "corn-starch farina" are usually much more finely bolted than the dusting-powders extemporaneously prepared by chemists. All starchy substances are open to the objection of forming little pasty rolls or "cakes" when wetted with serum or with sweat. Lycopodium, which consists of irregularly shaped globular pollen-sporules, never behaves in this way, and is, for that reason, deservedly popular. Zinc stearate with acetanilid is excellent for similar reasons, and when dusted on the surface forms a dressing impervious to moisture.

Medicated powders may be first dissolved in alcohol, ether, or chloroform. The solution is then mixed with starch or with French chalk. Evaporation of the menstruum is conducted without artificial heat, and a fine medicated starch or a chalk-powder results.

For absorbent purposes Grundler¹ has shown that by far the most effective powder is magnesium carbonate.

Plasters are employed when it is desired to exert a more or less continuous effect upon the skin, and are thus necessarily consistent and desirable. The resin-plasters are less useful in skin-diseases because more irritating than the lead-plasters. In the zinc-oxide adhesive plaster the irritating effects of the resin have been entirely overcome, and the result is a plaster which has excellent adhesive qualities and which rarely causes irritation even to sensitive skins. It thus answers admirably where simple protection is desired, and may be safely employed in order to retain other dressings in place. Unna's plaster-mulls are described below. The mercurial plasters are useful, especially in syphilitic lesions of the skin.

A valuable addition to the list of methods for applying medicated ointments to the skin has been devised by Unna. His SALVE-MUSLINS, or salve-mulls, are strips or bandages of muslin thoroughly impregnated and thickly spread with ointments medicated with almost every desirable substance, from zinc oxide to tar, thymol, salicylic acid, and mercury. They are elegantly made, and when exported are surrounded by impermeable tissue, so that they remain fresh and sweet for several weeks, or even for months if kept in a cool place, but deteriorate rapidly if exposed to the air of a warm room. They are efficacious, and, as a rule, well liked by patients. They are available in skin-diseases of the exudative class affecting the extremities, but should be avoided when not recently prepared.

Unna's PLASTER-MULLS seem to be less useful. They are plasters

¹ Monatshft. f. prakt. Derm., 1888, No. 20.

thinly spread on gutta-percha cloth, and manufactured with a wide range of medicinal constituents. They serve a good purpose in the protection of parts of the skin exposed to friction.

Salve-pencils (*stili unguentes*) and **Paste-pencils** (*stili dilubiles*), the latter destitute of fat and soluble when moist, the former insoluble in water and compounded of fatty substances, are pencil-sized crayons made with wax, gum, and starch, for application to limited areas of the skin. The several mercurials, arsenious acid, cocaine, salicylic acid, and other medicaments may be applied in this way to the surface.

Poultices are not often ordered in the management of diseases of the skin, except for the purpose of softening crusts with a view to their removal. They are made, both warm and cold, with linseed-meal, potato-starch, bread and milk, oatmeal, and cornmeal. These applications are objectionable in all conditions in which a macerative effect of the epidermis is produced; and also in which micro-organisms may find a culture-field in the mass of the poultice. Poultices, in any needful case, may be made antiseptic by the addition of formalin, boric acid, or mercuric chloride.

Lanolin, or wool-fat, was first introduced as a salve-base by Liebreich, of Berlin. It is a substance obtained from keratinic tissues, and contains cholesterin-fat instead of glycerin, with but 30 per cent. of water. It has a bright-yellowish color, a distinct odor of the sheep, and is neutral; when pure it is never acid in reaction. The refined product now placed upon the market is free from cholesterin compounds and requires no fatty addition. This substance is readily absorbed from the surface of the skin, and, either pure or medicated, may be regarded as a useful addition to the bases of ointments. The *adepts lanæ* answers the same end.

Oleates of zinc, mercury, copper, lead, and other metals have been employed with advantage in the topical treatment of disorders of the skin. Of these, the oleates of mercury and of lead are decidedly the most valuable. The latter is represented by Hebra's white diachylon ointment. The mercuric oleate is serviceable in syphilitic, parasitic, and other disorders.

The **Vasogen** products bid fair to supplant the oleates in their ready absorption from the skin-surface. In mercurial inunction vasogen-mercury capsules supply the exact amount required for employment at each sitting.

Collodion and **Traumaticin** are employed for the purpose of applying a remedy to the skin, and at the same time for protecting or contracting the surface to which the application is made. Traumaticin is the name given to a solution of gutta-percha in chloroform, in the proportion of 10 per cent. In this way bismuth, cantharides, sulphur, chrysarobin, zinc oxide, white precipitate, iodine, and other substances may with advantage be applied to the surface, and the action of each be definitely limited to the margins of a single patch of disease.

Tar in its several varieties, crude and distilled, together with its derivatives, occupies an important place among efficient topical agents. In general, it seems to exert upon the epidermis a local influence, which extends more deeply as the remedy is continuously applied. At

times both irritative and inflammatory effects are thus induced, and even systemic intoxication when absorption from the skin occurs. *Pix liquida*, or the *oleum picis*, is the favorite article of this group with most American physicians; but the *oleum cadini*, or oil of juniper, and the *oleum rusci*, or oil of birch, are rather more generally employed by experts. The last-named, found in purity and abundance and to be had at a low price in American markets, is recommended above the others. In Vienna the distilled oil is preferred, but there is good reason to believe that the crude oil is decidedly more efficacious.

The skill of a physician intrusted with the management of a disease of the skin might almost be measured by his success in the use of tar. He who has not had experience in its employment is urgently advised to select one member of the tar-family and learn thoroughly how to apply that, singly and in combination, either as a lotion or in salve. Properly employed, it will favor involution of lesions, lessening hyperæmia, infiltration, scaling, and discharge. It serves admirably as an anti-pruritic. It may, however, produce severe inflammation of the skin.

To produce the benign or emollient effects of tar, it is best mixed with some soothing or astringent powder, and with this end in view nothing is better than chalk. Spender's hints¹ for making such an ointment are admirable: Finely levigated chalk is strewed into melted lard in a stone jar, the whole being stirred until it is cold. Then at first the smallest quantity of tar sufficient to make a brownish smear of color is added to the quantity of salve employed for use. This color can be successively deepened at will. Auspitz advises the use of the tars in a pure state, applied in very small quantities with a strong bristle-brush and well rubbed in. In combination with one of the most valuable of all substances for topical use in cutaneous therapeutics, viz., sulphur, tar enjoys a special reputation. The Wilkinson salve modified (*q. v.*) represents such a combination.

A group of substances which occupy a therapeutic position inferior to the tars, but which serve an important end in the management of cutaneous diseases by the production of similar effects, are carbolic acid, creosote, salicylic acid, benzol, naphthol, iodol, thiol, chrysarobin, pyrogallol, resorcin, and jequirity.

Ichthyol, fish-oil, introduced to the profession by Unna, is the distillate of a bituminous and sulphurous deposit of petrified fishes and marine fossils found in the Tyrol. Its chemical formula is $C_{26}H_{36}S_3Na_2O_6$. It has a tarry appearance, odor, and consistency. It is soluble in water, partly so in ether and alcohol, and can be incorporated in any desired proportion with fat, vaselin, and lanolin. It has been used both pure and diluted; and several proprietary articles (plasters, soaps, salves, and medicated cotton) are in the market. It has been used both in America and in Europe in cases of leprosy, pruritus, acne, sycosis, eczema, psoriasis, and a number of other cutaneous disorders.² It is used in solutions of from 10 to 50 per cent.

¹ Practitioner, June, 1883, p. 402.

² See Baumann and Schöten: *Monatshft. f. prakt. Derm.*, 1883. Unna: *Ibid.*, 1882; *Deut. med. Zeit.*, 1883. *Samml. klin. Vort.*, 1885; Lorenz: *Deut. med. Woch.*, 1885; Stelwagon: *Jour. Cutan. and Ven. Dis.*, 1886, p. 326; Zeisler: *Chicago Med. Jour. and Exam.*, 1886.

and in salves of from 5 to 20 per cent. strength. As before stated, it is also administered internally, more particularly in the management of rheumatism, in doses of from 15 to 20 drops. It does not seem to have a disturbing effect upon the stomach.

Unpleasant results have been reported as following its application in a single instance (Sinclair). A four months' old infant sank into a stupor two hours after its head and limbs were smeared with a salve composed of one part of ichthyol to five of vaselin.

Thiol makes an excellent substitute for ichthyol for most purposes, and lacks the unpleasant odor of the latter.

Resorcin in ointments of the strength of from 5 to 20 per cent. serves as an antipruritic and alterative. Stelwagon reports an anodyne effect following its use. The same experimenter has modified Ihle's formula by adding 1 drachm (4.) of resorcin to 1 to 2 drachms (4.-8.) of castor-oil, 5 minims (0.33) of Peruvian balsam, and 4 ounces (120.) of alcohol, for use in alopecia and seborrhœa of the scalp. It is a valuable parasiticide in lotions of the strength of from 5 to 10 per cent., and is especially useful in disorders of the scalp due to seborrhœa.

Naphtol, or β -naphtol, as it is termed chemically, first introduced by Kaposi, is chiefly valuable in scabies, but has also been used in the management of eczema, psoriasis, and other exudative affections. Van Harlingen¹ has found it to answer well in seborrhœa of the scalp. Neisser has described renal disorders as resulting from its use in children, but MM. Josias and Nocard² report that in ordinary medicinal doses it is harmless. The fact that the naphtol preparations are odorless and do not stain the skin is to be set down in their favor.

Boric Acid is of great value in diseases of the skin and is extensively employed as a lotion and in ointments and powders. As a rule, it exercises a sedative effect upon the surface to which it is applied. Over mucous surfaces it is occasionally a source of moderate irritation.

Salicylic Acid operates especially upon the keratinized tissues of the epidermis, softening and separating the external portions of the horny layer from its deeper connections. For this reason it has a special value in all the hyperkeratotic dermatoses. In somewhat weak strength it is employed as an antipruritic agent. It is most often employed in salves or pastes but is also used in lotions, being soluble in 2.5 parts of alcohol, 2 parts of ether, or 450 parts of water. It is a common ingredient of most of the popular corn- and wart-cures.

Carbolic Acid, since in value as an antiseptic it has been largely surpassed by other articles, is chiefly employed to-day upon the skin as an antipruritic. It is applied in the form of lotion, salve, and paste, but much more often in lotions having the strength of from 10 to 20 grains to the ounce (0.66-1.33 ad 30.). Other acids—nitric, sulphuric, lactic, acetic, muriatic, benzoic, tannic, chromic—are employed either for caustic, destructive, or stimulating effect, usually in liquid form. Tannic acid, however, is occasionally employed as a powder, in which form its astringent quality is combined with the soothing or antiseptic effect of other substances in powder.

¹ Amer. Jour. Med. Sci., Oct., 1883.

² Ann. de Derm. et de Syph., May, 1885.

Chrysarobin, **Pyrogallol**, and **Anthrarobin** are useful as cutaneous stimulants capable of determining in the skin to which they are applied a characteristic dermatitis limited to the site of the application. Chrysarobin is especially useful in the local treatment of psoriasis, lepra, and the disorders due to vegetable parasites. It is employed in from 1 to 10 per cent. strength, in salve, lotion, or in collodion. A useful combination in the parasitic disorders of the scalp due to the microsporon Audouini or to the trichophytons is a solution of chrysarobin in oil of turpentine, about 1 part in 250. A chief objection to its use is the consequent staining of the skin and articles of apparel. On the scalp the hairs are turned to a yellowish-green shade. Pyrogallol oxidizes after exposure and turns the skin a blackish color. It is useful in many cases of lichen planus, eczema, and the diseases due to the vegetable parasites. It has been employed in the strength of 50 per cent. in the removal of epitheliomata. Anthrarobin, though inferior to both of the other articles named, is effective in the same general manner.

Iodine, especially in the form of tincture, is useful as a local application in certain of the seborrhœas, and as a parasiticide. It is often employed with mercury in the form of an ointment. The ointments compounded of the salts of iodine, with mercury, though of unquestioned efficacy, are less employed to-day than formerly.

Jequirity (*Abrus precatorius*), employed by ophthalmologists for the purpose of inducing artificial inflammation of the conjunctiva, has been used by Shoemaker¹ in the management of lupoid and other ulcers. One part of the cleansed, decorticated, and bruised grains, macerated for twenty-four hours, and reduced by rubbing in a mortar to a smooth paste, was added to sufficient water to make four parts. This emulsion was used for local application.

Sulphur, popularly employed chiefly as a laxative or for the local treatment of scabies, has also a deserved reputation in cutaneous therapeutics as an external agent in a wide range of non-parasitic disorders. Hebra once regarded it as valueless in eczema, but his opinions on this point are not now generally accepted. Precipitated sulphur is to be preferred to the other compounds of the pharmacopœia. It may mechanically be incorporated with salve-bases, or chemically combined with vaselin and other petroleum-products, a process by which, as experiments have shown, its therapeutic value is not increased. It is also applied after mechanical union with various substances as a lotion. It is irritating to the acutely inflamed skin, but is much better tolerated than the tars in conditions of subacute or chronic exudation.

Formaldehyd is a valuable antiseptic agent most commonly employed as formalin, a proprietary preparation representing 40 per cent. of the compound. Formalin in the strength of 1 per cent. commonly produces a slight irritation over the thin skin of the face; and after application in the strength of 2 per cent., which should be rarely exceeded on the cutaneous surface, there follows a decided sensation of burning with a resulting transient erythema. It is a remedy of the highest value in the treatment of syphilodermata, acne, seborrhœa,

¹ Lancet, Aug., 1884, p. 185.

the disorders produced by the vegetable parasites, several of the eczemas, impetigo, and other affections. It is well to color the solution with a trace of fuchsin.

Pyoktanin-blue is employed in aqueous saturated solution as a parasiticide in those disorders of the skin especially which affect regions beneath the clothing or which may be protected by dressings from exposure to the eye. It is highly valuable as a local and painless application in circumscribed patches of weeping or scaly eczema, in many of the ulcerating syphilodermata, in lupus, and in ringworm. It should be applied daily in several coats, each coat being permitted to dry before the next is superimposed.

Potassium Permanganate belongs to the same category as pyoktanin-blue, with the disadvantage that it is in some strengths productive of pain, while the pyoktanin solution is unproductive of pain. From 2 to 10 per cent. solutions of the potassic salt may be painted on the affected surface one or more times daily till the desired effect is produced. The indications for its use are those which the pyoktanin solution is intended to meet.

Mercury and its compounds are of value in the local treatment of many disorders of the skin, syphilitic and non-syphilitic. The preparations of mercury employed as topical agents in the treatment of diseases of the skin are of the highest value. They include corrosive sublimate, calomel, the red and yellow oxides, the biniodide and cinnabar, the white and red precipitates, and the nitrate. The most commonly employed of their combinations are the "black wash," ointment of the nitrate, and mercurial ointment. Fumigation of the surface by vaporization of either cinnabar or calomel or the two in combination is chiefly employed in the local treatment of syphilodermata. The bichloride is most often applied as a lotion; calomel and white precipitate in ointments; though calomel is often effectively combined with talc or starch as a powder. Startin's nitric oxid of mercury ointment represents a combination of two mercurials: red mercuric oxide, 6 grains (0.40); mercury bisulphate, 4 grains (0.25); simple cerate, 1 ounce (30.). Corrosive sublimate as a parasiticide is of great importance in the treatment of several cutaneous disorders due to the presence of micro-organisms, as, for example, lupus vulgaris.

Chloral-camphor and **Phenol-camphor** have value chiefly as antipruritics. The former is obtained by rubbing together chloral hydrate and gum-camphor (Bulkley) until they form a clear liquid of pungent odor. Phenol-camphor is made by gradually adding camphor to melted crystals of carbolic acid, a colorless liquid resulting having the fragrant odor of camphor without that of the acid. It is a useful local anæsthetic agent, being insoluble in water, but freely soluble in chloroform, ether, and alcohol.

Many Agents are employed upon the surface of the integument to produce in various degrees a *caustic* or *destructive* effect. Among these may be named the thermo-cautery (Paquelin-knife), galvanocaustic apparatus, the mineral acids and alkalies, sodium ethylate, arsenic, zinc chloride, several mercurial compounds, mercuric nitrate, mercuric chloride, antimonious chloride, cupric sulphate, and argentic

nitrate. Several of these substances in weak solution are employed as milder agents for the production of irritative or even inflammatory effects. To the latter class should be added iodine in tincture, chloroform, tartar emetic, croton-oil, and cantharides. These destructive effects are of advantage in the treatment of disorders of the integument due to parasites, either animal or vegetable. Of those employed for this purpose, and not mentioned above, may be named petroleum and staphysagria, for the destruction of lice; sulphur, styrax, and balsam of Peru, for the destruction of acari; and sulphur and its compounds and a number of derivatives from tar, for the destruction of vegetable parasites.

Counter-irritation over the Vasomotor Centres, as recommended by Crocker, is an efficient means of relieving fixed and obstinate cutaneous disorders. It may be produced by the action of sinapisms, blisters, or caustics over the region selected for such irritation.

A large list of medicinal substances might be added which are occasionally employed in cutaneous affections, some very rarely, the most with questionable effect. Among them may be named alcohol, which is of high value as a disinfectant, and hydrogen peroxide, having a similar effect; ether, the opium alkaloids, cocaïne, belladonna, cannabis indica, and aconite, for anæsthetic and antipruritic effect; and ergot, cantharides, mustard, croton-oil, tartar emetic, benzoin, capsicum, rosemary, and the several salts of lead. Many of the articles named, such as cantharides, rosemary, and capsicum, are employed as lotions for the scalp in the several alopecias.

The salts of zinc (sulphate, sulphocarbolate, acetate, oxide), of copper, alum, lead, bismuth, and other metals are of service in diseases of the skin as productive of both astringent and stimulating or even of caustic effects. The careful adjustment of the dosage in each instance is of the highest importance, and is practically indispensable for the production of beneficial effects.

Electrolysis is a method of the greatest value in the treatment of a large number of cutaneous affections, such as hypertrichosis, telangiectases, molluscous tumors, warts, etc. It is accomplished by the aid of the galvanic battery in the manner described in this work in the pages devoted to the first of the disorders named.

The **Minor** and other **Surgical Operations** required in the management of some affections of the skin are detailed in the treatises devoted to that subject. Among such procedures may be named skin-grafting, both by the methods of Reverdin and Thiersch, and the several devices of plastic surgery. Strictly dermatological procedures to which resort must often be made are: epilation in hyphogenous sycosis and other affections; massage, especially by the massering-ball; the operations on the face, especially in acne, when opening small abscesses, removing comedones, and incising papules; and multiple scarification, as in telangiectases and other lesions.

Numerous **Surgical** and other **Appliances** are found useful as adjuvants in the treatment of skin-diseases. They may be employed to support, protect, or compress the surface, or merely to aid in the

retention of dressings or external medicaments. Thus, the ordinary roller-bandage is applicable to many portions of the body ; the suspender, or suspensory bag, to the scrotum ; elastic or inelastic stockings to the feet and legs ; kid, rubber, and thread gloves to the feet and fingers ; and various skull-caps, face-masks, and mittens are employed in the case of infants and children to protect affected surfaces from the traumatism of scratching.

Apart from the surgical apparatus required for ablation of tumors or severe operations, a number of instruments are required for the daily use of the dermatologist. Among these may be named :

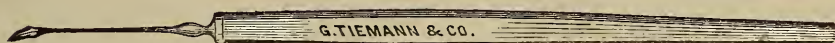
A set of variously sized dermal curettes. These sharp-edged spoons are for erosion of the surface, and should, for general use, have in each a fenestrum large enough to permit the escape from the floor of the spoon of all collected substances. The small-sized spoons, however, with solid bowl and sharp edges, largely used in Vienna, are preferable for use, especially about the face, in many skin-affections. Epilating-forceps, with easy springs and smooth blades meeting in perfect apposition ; a set of Piffard's comedone-extractors, provided at each extremity with a differently sized, minute, spoon-shaped and perforated bowl, the convex surface of which is pressed over the comedo with the orifice immediately over the black head of the plug. This is a great improvement over the old-fashioned comedo-extractor shaped like a watch-key, and the discomfort to the patient by its use is greatly reduced. A set of half-inch and four-inch lenses for examining the surface of the skin ; needle-holders with light handles for firmly grasping the needles used in opening pustules, etc. The needles, some of them, should be flat, with a double-cutting edge, others be rounded neatly on an emery-wheel, and all of them carefully disinfected if used more than once. Too many precautions cannot be taken in the practice of dermatology with respect to the disinfection of all instruments made to penetrate the skin. Probes, exploring-needles, fine dressing-forceps, delicate straight and curved scissors, and other instruments from the ordinary pocket-case of the surgeon, are indispensable. The instruments required for use in connection with the galvanic battery are enumerated in the chapter on Hypertrichosis.

FIG. 23.



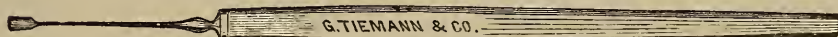
Irido-platinum needle.

FIG. 24.



Miliun-needle.

FIG. 25.



Scarifying-spud.

FIG. 26.



Epilating-forceps.

FIG. 27.



Piffard's grappling-forceps.

FIG. 28.



Piffard's cutisector.

FIG. 29.

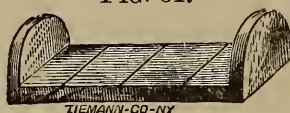


FIG. 30.



Dermal curettes.

FIG. 31.



Hess's glass pleximeter, for observing the skin under pressure.

FIG. 32.



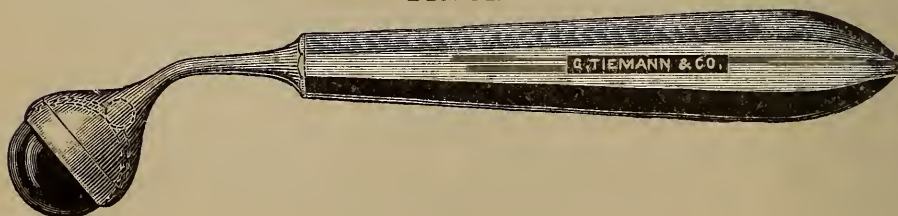
Piffard's modification of Unna's comedo-extractor.

FIG. 33.

 $\frac{3}{4}$ OF REAL SIZE.

Keyes's cutaneous punch.

FIG. 34.



Hyde's massering-ball.

VIII. CLASSIFICATION.

THE numerous attempts which have been made to classify diseases of the skin according to their nature and relations have been in response to the generally recognized demand for a systematic arrangement of all scientific facts. As regards dermatology, not only have these attempts been numerous and based upon different principles, but the results which they have accomplished have also been in the highest degree divergent. No classification yet devised has secured general acceptance. While it is certain that no one system of classification has been perfect, and that each has exhibited defects, it is equally true that of the large number each has possessed some merit of its own. No perfectly satisfactory classification of cutaneous diseases can be made until the knowledge of diseases of the skin has been greatly enlarged.

One of the most acceptable of the systems thus far proposed is that of Hebra. In it cutaneous disorders are arranged in the following nine classes :

- CLASS 1. Disorders of secretion.
- CLASS 2. Hyperæmias.
- CLASS 3. Exudations.
- CLASS 4. Hemorrhages.
- CLASS 5. Hypertrophies.
- CLASS 6. Atrophies.
- CLASS 7. New Growths.
- CLASS 8. Neuroses.
- CLASS 9. Parasites.

Since this classification was devised by Hebra none has been proposed which compares in ingenuity with the arrangement made by Auspitz. The principle of this classification is to place together those diseases and groups of diseases which present a clinical unity, the general pathological process being the predominant characteristic for selection ; individual characteristics, such as symptoms, localization, anatomical peculiarities, etc., being only brought thus predominantly forward when coinciding with the real nature of the class, the group, or the skin-disease in question.¹ Auspitz's nine classes are :

- 1. Simple Inflammatory Dermatoses ; 2. Angioneurotic Dermatoses ;
- 3. Neurotic Dermatoses ; 4. Stasic Dermatoses ; 5. Hemorrhagic Dermatoses ; 6. Idioneuroses ; 7. Epidermidoses ; 8. Chorioblastoses ;
- 9. Dermatomycoses.

Under these classes, by the aid of divisions and subdivisions, an elaborate scheme is presented which embraces not only all cutaneous

¹ System d. Hautkrankheiten. Wien, 1881.

diseases, but also all pathological processes recognized in the skin. The mere presentation of this system has been followed by an advance in the nosology of cutaneous medicine more satisfactory than any since the contributions to this subject by Hebra.

Auspitz's classification, however, is open to various objections on the part of the student of dermatology. It is elaborated to the extent of placing the names of some diseases in more than one family, and hence is confusing to the beginner. It is better adapted to the needs of the expert than of the student, for it introduces to the study rather of morbid processes in the skin than of the complexus of those processes which are recognized in disease.

Whether the principle of classification be anatomical, etiological, or pathological; whether it be based on the processes actually occurring in the skin, or on those deeper factors and forces which operate centrifugally upon the skin, and on which that organ depends for all its functions and even its existence; whether it proceed etiologically from causes which are immediate or those which are remote, it is easy to see that, as knowledge in each of these directions enlarges, the exact position of any one disease in any given classification must be rendered insecure. Never was this observation more suggestive than at this day, when the pathogeny of numerous skin-disorders is revealed in the light thrown on the subject by the discovery of hitherto unknown inferior organisms.

Indeed, to this last cause, awakening grave doubts as to the precision of much that was once esteemed fact, may be attributed the declining interest in the general subject of classification of diseases of the skin. The solution of its problems has practically been deferred by common consent to a date when the questions thus suggested can more satisfactorily be answered. Several recent writers have contented themselves with an alphabetical indexing of the names of skin-diseases as an order useful simply for reference.

The arrangement of titles of diseases of the skin in this treatise is a modification of the scheme first proposed by Hebra on the lines recognized by the American Dermatological Association in its classification adopted in 1884. In the successive editions of this work which have appeared since this classification was first accepted, changes from time to time have been made which were rendered necessary by the advancements of science. As the arrangement stands to-day it should be regarded as a mode of grouping diseases for the convenience of the student rather than as an attempt at a scientific classification of diseases of the skin.

DISEASES OF THE SKIN.

CLASS I.

DISORDERS OF THE GLANDS.

IN this class of disorders are grouped the functional affections of the sweat-glands, or coil-glands, the sweat-pores, and the sebaceous glands. These disorders may be betrayed in quantitative or in qualitative changes in the secretion, or in retention of the latter in the whole or in a part of the secretory apparatus. When a disease of the skin ceases to be purely functional in type, and is accompanied by an exudative process, glandular or periglandular in situation, such disease is properly classed with another group of affections. With a view, however, to convenience of arrangement there have been placed in this class a few dermatoses which cannot be regarded as strictly functional affections.

1. DISORDERS OF THE SWEAT-GLANDS.

HYPERIDROSIS.

(Gr. *ὑπερ*, in excess; *ἵδωρ*, water.)

(IDROSIS, HYDROSIS, EPIDROSIS, SUDATORIA, POLYIDROSIS, HYPERHIDROSIS.)

Hyperidrosis is an exaggerated quantitative effusion of sweat, the secretion accumulating in visible drops upon the surface of the skin.

Symptoms.—This condition may be physiological, as the result of active exertion in a medium of high temperature; or it may be pathological in character, and in the latter case be either general or partial.

General sweating to a pathological extent chiefly occurs in the obese, but also in those who are the subjects of constitutional disease (phthisis, the various febrile disorders, etc.). It is the fertile source of the various forms of intertrigo, sudamina, and miliaria. Local hyperidrosis is the exaggerated quantitative effusion of sweat limited to certain definite portions of the skin, as the palms, the soles, the dorsa of the hands and feet, the interdigital spaces, the genitals, the axillæ, and the temples. In such cases the secretion occurs moderately or greatly in

excess, varying in this respect somewhat in different degrees of temperature and in rapidity of the circulation; it is occasionally, but not commonly, accompanied by fœtor. It may involve one or both sides of the body, being generally symmetrical upon the extremities and asymmetrical upon portions of the face.

Its topical expression may be studied in the hands, which are continually moistened, clammy, or dripping with fluid within a brief time after the most careful drying of the parts. In the case of a woman, the instincts of whose sex prompt her to take such precautions, the dress is constantly protected from contact with the macerated palms by a handkerchief or similar article which is always in readiness. The disadvantages thus arising in individuals of both sexes who are engaged as tradespeople, artists, hand-workers, etc., are obvious. In women of social position no small complaint is made of the disagreeable result produced after wearing kid gloves for even a short time, the material of which is soon soiled by its complete saturation with the secretion from the skin.

With and without this local excess occurs the hyperidrosis of the feet, aggravated by the mechanical force of gravity and the need of constant covering. The stockings and the leather of the boots, shoes, or gaiters are saturated with the secretion, and rapidly become subject to chemical alteration. There is usually an offensive odor of the region, originating partly in the primary fœtor of the secretions themselves, and partly in the subsequent chemical decomposition of the latter, rapidly progressing under the influence of the soiled and often stinking investments of the feet.

The integument, constantly macerated, may become both painful and tender; occasionally there is vesiculation or exfoliation of patches of sodden epidermis. When the genitals are involved, especially in men, erythema and intertrigo are the frequent results.

Etiology.—The disease is frequently recognized in persons suffering from an habitually rapid or slow pulse or from organic cardiac disease; in rare cases it is congenital. In other instances it is associated in one person with disorders not apparently related to it. In the case of a hospital-patient recently examined, a woman, twenty-four years of age, was affected with severe tylosis of the feet, from which were exfoliated extensive lamellated casts of the soles. She had also typical hyperidrosis of the hands.

In no portion of the nervous system has a localized centre for excitomotor or inhibitory effects been recognized. Traumatism, gliomata, gummata, scleroses, and other lesions affecting the cerebrum, medulla, cord, ganglia, and trunks of the sympathetic nervous system have been followed by local hyperidrosis, but they have all repeatedly failed to induce such morbid sudoral symptoms, while a fit of anger or sudden fright has been as conspicuously effective as any. In short, the predominant influence of the nervous system in an etiological sense must be admitted here as in physiological sweating, and to the sympathetic branches of that system must be assigned the greater influence for most cases. A paralysis or paresis of the sympathetic is held to explain the occasional coincidence of pulmonary and cardiac disorders with either

general or partial excessive sweating. Compression of the sympathetic by adenomata, aneurisms, carcinomata, etc., has been followed by marked symptoms of this disorder. The disease is encountered in individuals of both sexes, and in all ages and degrees of general health, as also in those who are and those who are not cleanly. There is reason to believe that the facial asymmetrical hyperidroses associated with migraine, neuralgias, hemicrania, etc., are etiologically and pathologically distinct from the similar symmetrical affections of the hands and feet. The last-named disorders certainly occur with conspicuous frequency in young women who are the subjects of hysteria, chloro-anæmia, some form of dysmenorrhœa, or cardiac trouble.

Pathology.—Robinson, who examined a number of sections from the palm of the hand, failed to detect any abnormal feature either in the glands or in the epithelium. The disorder is to be regarded as purely functional; and any anatomical changes in the coil-glands or the sweat-pores are probably accidents of such derangement of function.

Treatment.—When universal, hyperidrosis is to be treated internally by the aid of such remedies as are indicated by the general condition of the patient, and especially by the condition of the heart. The various ferruginous tonics, mineral acids, arsenic, strychnine, strophanthus, quinine (the latter particularly when, as is often the case, a malarial affection is responsible for the disorder), and ergot, with both belladonna and atropine, are all of unquestioned value. Even though but temporarily serviceable, belladonna and atropine are well used at the outset of most cases. Aconite, jaborandi and pilocarpine, white agaric (agaricin is recommended in doses of $\frac{1}{8}$ grain (0.011), repeated as required), carbolic and salicylic acids may be named as in the second rank. Meat should always be largely eliminated from the dietary.

External treatment, which is often promptly efficacious, should not be neglected in any case. The simplest method is by wiping, not washing, the skin-surface until it is dry, and applying a dusting-powder, such as lycopodium, talc, salicylic acid, boric acid, bismuth, magnesia, chloral hydrate (1 part to 5 or 6 of starch), or starch. Alternately with either of these, or in lieu of them, baths or lotions may be employed, aqueous or alcoholic, and medicated with corrosive sublimate, formalin (1 to 5 per cent. solution), tannic acid, ferrous sulphate, naphthol (Kaposi), turpentine, zinc sulphate, alum, potassium permanganate, or common salt. Daily sponging of the affected surface with weak solutions of formalin (1 to 6 per cent.) will remove the odor, and will in most cases greatly diminish the amount of perspiration, but on suspension of the treatment the condition usually returns. Fox¹ advises a lotion containing 1 part of quinine to 100 of alcohol. Van Harlingen recommends the use of juniper-tar or carbolic-acid soap with the bath as alone sufficient to relieve some cases. Grosse² praises highly tannoform, either in powder (1 part to 2 of talcum) or as a 25 per cent. plaster.

¹ Jour. Cutan. and Ven. Dis., 1885, p. 24.

² Klin. therap. Woch., 1899, Nos. 16 and 17.

For hyperidrosis of the feet the treatment by the method of Hebra has deservedly high repute. It consists in neatly and completely enveloping the entire foot, the toes separately, after thorough washing and drying, in strips of cotton-cloth over which is spread to the thickness of a common knife-blade the unguentum diachyli albi. This unguent is made by boiling 1 part of the best litharge with about 4 parts of pure olive-oil, to which a little water is added while the materials are stirred together over a slow fire. The parts are well bandaged, and the patient either remains subsequently at rest or pursues his vocation, wearing over the feet shoes and stockings which have not previously been worn. In twenty-four hours the feet are redressed without washing, after dry rubbing with charpie and a dusting-powder. This treatment is repeated daily for from ten to twenty days, after which a dusting-powder (boric acid) may be substituted for the local dressing. There occurs a parchment-like desquamation of the epidermis in thick, yellowish-brown lamellæ, beneath which is formed a new and at first tender but apparently normal epidermis. When the latter has lost its tenderness the feet are for the first time washed with water. In case of failure the routine of treatment is repeated as often as requisite. It is scarcely necessary to add that no ill effects are known to have resulted from the therapeutic measures adopted in checking a local hyperidrosis. For the diachylon salve there may be substituted tar, ichthyol, or naphthol ointment.

Gerdeck¹ makes three applications to the soles, at intervals of about eight hours, of the strongest solutions of formalin the skin of the individual will bear. In some instances full strength is well tolerated. A few drops are put in the shoes, the influence on the leather being preservative and not destructive. Relief follows for several weeks, when the treatment may be repeated.

Fredericq employs finely pulverized tartaric acid, applied at first with some caution, and always in small quantities. Stewart first bathes the feet in hot water and then soaks them for a few moments, once only, in a solution of potassium permanganate, 4 to 6 grains to the ounce (0.266–0.4 to 32.), after which the plaster selected for use may be applied as directed above. Legoux orders pediluvia of tar-water twice daily for three days, followed by painting of the feet with a solution of iron perchloride. Morrow² recommends foot-baths in the extract of *pinus Canadensis*, followed by the application of boric acid, or of salicylic acid mixed with lycopodium.

Prognosis.—The future of any case of hyperidrosis is uncertain. The disease, whether local or general, may spontaneously disappear, may recur, may promptly be amenable to treatment, or may prove obstinate to all therapy. Myrtle³ reports the case of a male patient, seventy-seven years old, who sweated to death after repeated recurrences of severe hyperidrosis, and after temporary relief from the use of Fowler's solution.

¹ La Riforma Medica, 1898, No. 38.

² See his *résumé* of this subject in Jour. Cutan. and Ven. Dis., vol. v., p. 68.

³ Medical Press, February 25, 1886.

SUDAMEN.

(Lat. *sudor*, sweat.)

(MILIARIA CRYSTALLINA.)

Symptoms.—In this disorder the lesions are thickly agglomerated, but discrete, transitory, and translucent, pin-point-sized vesicles, resembling dew-drops or seed-pearls, upon the surface of the skin, often requiring the touch to define their real character. The lesions are usually limited to certain regions of the body, as the trunk, and here more generally upon the front and sides of the belly and in the iliac regions, though they may occur upon any part. Their course is rapid, both in evolution and involution, and their sequelæ are exceedingly delicate desquamative flakes, the thin roof-wall, which originally covered the sweat-drops, having been lifted from the superficial stratum of the horny layer of the epidermis. They contain each a droplet of sweat, which is removed by evaporation. They are usually preceded by an attack of pruritus, and may follow the hyperidrosis of systemic debility, enteric and continued fevers, phthisis, inflammatory rheumatism, pneumonia, and other asthenic conditions. They may also result from violent exercise, the elevated temperature of the summer season, flannel underclothing, vapor-baths, and the application of wet hot cloths to the surface of the skin.

The lesions are the result of the accumulation of sweat in high temperatures of the external surface of the body or of the medium by which the body is surrounded, and usually in states of adynamia. The sweat accumulates between the most superficial layers of the stratum corneum. Sudamina may hence occur at all ages and in both sexes.

Three forms of sudamina have been described: (*a*) sudamina alba; (*b*) sudamina rubra; and (*c*) sudamina crystallina. The last named is the only form to which the term sudamen is properly applied, since it alone of the three designates a purely functional derangement of the sweat-secreting apparatus.

The first term, sudamina alba (*miliaria alba*), is applied to the lesions occurring where there is maceration of the vesicular wall and when the contents become opalescent. This form is rare. The second term, sudamina rubra (*miliaria rubra*, *miliaria papulosa*, *lichen tropicus*, "prickly heat"), is applied to inflammatory lesions which may accompany profuse sweating. These lesions are numerous pin-point- to pin-head-sized vesicles surrounded by a reddish halo, or papules of the same dimensions, or the two lesions commingled, almost invariably accompanied by hyperidrosis, though the latter may be absent in high temperatures. The marked tingling, pricking, and burning sensations by which they are accompanied are often in the highest degree distressing, and may solicit rubbing of the affected part, though the scratching elicited by severe pruritus is not common. Minute crusts may form after vesicular rupture. The attack may be mild or severe, and may last for a few days or for a few weeks or months, the result of continuous aggravation or of the production of new crops of lesions

after each recurrence of the cause. The affection is not rarely complicated in obese individuals by all varieties of intertrigo and eczema. Sudamina crystallina are, however, the sole lesions which may properly be referred to this class of affections. These vesicles are always free from inflammatory symptoms, presenting a limpid, dewdrop-like aspect that is characteristic.

Etiology.—The disease is induced by excessive sweating, often in consequence of an elevated temperature; also, however, as a result of a systemic asthenia, as indicated above. The vesicles may occur as symptoms of the death-agony.

Pathology.—Robinson reports that the contents of the vesicles are pure sweat without admixture of lymphoid corpuscles. The fluid collects between the laminæ of the deeper part of the corneous layer. A rupture of the wall of the sweat-duct may occur, but there may be instead obliteration merely of the sweat-pore by a sudden effusion of watery fluids toward the epidermis, that pass with moderate pressure through the wall-less sides of the pore into the spaces between the epithelial cells, where a chamber is readily formed. Török found the walls of the vesicle composed purely of the corneous layer with a sweat-pore opening at the lower border of the chamber.

Diagnosis.—No difficulty can arise in making a diagnosis if the peculiar characters of the sudamen be kept in view. All pustular lesions have different contents; all bullous lesions are larger, or are seated on an engorged base, or they lack the limpid clearness of the sudamen, because, however transparent the contents, they are mostly covered by a thicker and less transparent roof. The halo about the lesions of miliaria rubra, or their rosy-pink shade, will determine their character. In varicella the lesions are chambered.

Treatment.—Only the simplest treatment is required. Alkaline and bran baths may be employed, of the temperature most grateful to the skin. Afterward the surface may be dusted with one or several of the dusting-powders, such as starch, lycopodium, or boric acid, named in the chapter on General Therapeutics. The internal treatment is that indicated by the condition of the patient.

MILIARY FEVER, “sweating sickness,” *suette miliaire* of the French, is an epidemic disorder, accompanied by sweating and a cutaneous exanthem. Pineau¹ gives a description of the disease as it occurred in epidemic form on the island of Oléron, where of one thousand patients affected, between one hundred and fifty and two hundred perished. The eruption appeared in the form of hyperæmic maculæ, disappearing under pressure, after which there rapidly formed myriads of reddish or whitish, grouped, unequally sized, acuminate papules, rising from a whitish and macerated surface. Among these papules were interspersed lesions of sudamina. The region of the face was not spared, and the conjunctivæ were occasionally affected. In the course of from two to four days pinhead- to bean-sized, varioliform but non-umbilicated pustules formed in the site of some of the papules, the contents of which disappeared by resorption, the final lesions pre-

¹ Arch. gén. de Méd., Jan., 1882, p. 25.

sented being large, flat, reddish papules, the skin of the face particularly becoming reddened and swollen. In the course of from ten to twelve days general desquamation ensued, with extensive palmar and plantar losses. Relapses occurred in some cases with diffuse redness of the surface or with crops of reddish plaques, or yet again with the occurrence of furuncles. The sensations were those of myriads of needles thrust into the skin.

The exanthem was accompanied in some cases by fever. In the fatal cases death resulted from exhaustion.

Geber and other writers, however, believe that the lesions described are not peculiar to any special disease, and they deny the possibility of an independent miliary fever.

HYDROCYSTOMA.

(HYDROCYSTOMA, CYSTS OF THE COIL-DUCT.)

Robinson, of New York, in 1893,¹ published a report of his studies in this affection, which he first described eleven years previously, in a paper read before the American Dermatological Association. Reports of cases and studies of the disease have been made also by Hutchinson, Jackson, Jamieson, Rosenthal, Hallopeau, and others.

Symptoms.—The lesions are discrete or closely set, few or exceedingly numerous, tense, well-developed, clear, shining, pinhead- to pea-sized vesicles, never inflammatory and never superficially seated, that is, never as near to the surface as the vesicles of miliaria, because the base of all hydrocystomata is to be found in the corium. The lesions are whitish in color, or when of greater age and size are dark bluish, especially at the periphery, some resembling boiled sago-grains. No signs of inflammation are present. Occasionally a mild hyperæmia becomes evident at the periphery of a single cyst. The contents are pellucid, never changing to a yellowish hue, and when uninjured resolve in time by desiccation, leaving a short-lived pigmentation. The contents of the vesicles are always slightly acid. They are always accompanied by very free sweating.

Etiology.—The disease occurs almost invariably in middle-aged women, more often in those engaged as laundresses who have been sweating freely over the washtub, the face being simultaneously exposed to warm vapor. There is usually aggravation of the disorder in summer, and either complete or partial relief in winter. Aggravation has been noted at the time of the menstrual period. One of Hutchinson's cases exhibited lesions on a single side of the face only. Robinson reports a case occurring in a young man. The few patients seen by us were all of the dispensary class, and were women who worked much over the washtub.

Pathology.—The epidermis, hair-sacs, and sebaceous glands are in all parts normal, the papillary layers being involved only when the cyst approaches the upper part of the corium, where "a thin plate of flattened papillary body" is found above. Below, in places, the

¹ Jour. Cutan. and Gen.-Urin. Dis., August, 1893.

lumen of the sweat-duct is found enlarged and distended with liquid and a granular material. The enlargement in the duct begins above the coil of the gland, and usually in the lower part of the corium. There is some perivascular leucocytosis in progress here and there in the vicinity of the vessels, but this was not a marked feature in any one of the several sections examined by Robinson. The cavities of each duct were found lined with epithelial cells.

Diagnosis.—The lesions of sudamen and pompholyx are readily distinguished by their superficial character and their situation, as they are rarely discovered upon the face. The vesicles of eczema are short lived and inflammatory. In adenoma of the sweat-glands the lesions are often painful and usually firmer and larger than in hydrocystoma.

Treatment.—The lesions can be caused to disappear by puncturing each, thus permitting the escape of the imprisoned fluid. This should be followed by the application of dusting-powders, due care being had to avoid the effective causes of the malady.

ANIDROSIS.

(Gr. *a*, privative; ὕδωρ, water.)

(ANHIDROSIS. *Ger.* and *Fr.*, ANIDROSE.)

This name is properly applied to those morbid conditions in which no sweat is secreted from the surface of the body. Hypohidrosis is a term more exactly used to designate a relative, general or partial decrease in the quantity of the sudoral fluid. The former term, however, is often used to indicate the latter.

Complete anidrosis occurs naturally only when the sudoral apparatus has been involved in destructive or other changes in the skin (scars, atrophy, etc.).

Diminution in the quantity of sweat excreted, or its complete suppression, whether general or local, is a symptom of several disorders, but as a separate cutaneous affection it has no existence. This condition is common to many dermatoses, as, for example, ichthyosis, psoriasis, and some forms of eczema; but in these the symptomatic character of the anomaly is illustrated by the fact that when the skin is relieved of these cutaneous troubles the function of sweat-secretion is restored. Similarly in neuralgias and certain forms of paralysis a circumscribed and temporary anidrosis may be the local expression of the nervous disturbance, precisely as in the case of the symmetrical hyperidroses. Lastly, there are individuals exhibiting the idiosyncrasy of either sweating not at all or quite imperceptibly in elevated temperatures, phenomena which should be ascribed rather to peculiarities in the equilibrium of the heat-exchanging factors than to congenital deficiency of the sweat-glands.

Strauss and Bloch regard the occurrence of hypohidrosis and anidrosis as differential diagnostic symptoms of diffuse myelitis, poliomyelitis, and cerebral paralysis.

Treatment.—The measures capable of stimulating the sweat-secretion are: ingestion of water in quantity by the mouth, the external ap-

plication of heat in a dry or moist atmosphere, and the use of jaborandi or pilocarpine by the mouth or by hypodermatic injection. In the anidrosis accompanying cutaneous disease the indication is always primarily for the relief of the latter.

BROMIDROSIS.

(Gr. βρωμος, a stench ; ὕδωρ, water.)

(BROMHIDROSIS, OSMIDROSIS, FETID OR STINKING SWEAT.

Ger., STINKENDER SCHWEISS.)

Symptoms.—In bromidrosis the perspiration is effused in such a state that it can immediately be perceived to possess an unusual odor, or, as Hebra taught was the case with the majority of patients, to be rapidly changed to that condition. It is often associated with hyperidrosis, but may occur independently of the latter, and like the latter also be either general or localized. The odor may be either agreeable or disagreeable, having been in various cases compared to that of certain flowers and fruits as well as to that of several stench-emitting animals. In this respect the sweat presents a striking analogy to the urine, with which it sustains a close and well-recognized physiological relation.

General bromidrosis may be physiological, as in the case of individuals of the African race, or in those with dark skins who are profusely sweating during labor or in high temperatures. General pathological bromidrosis is rare. The odors emanating from the person in ulcerating syphilodermata, small-pox, malignant pemphigus, mycosis fungoides, and other disorders may, in certain cases, be associated with the sweat-secretion, but in other cases they doubtless are connected with the decomposition of pathological products of the inflammatory process.

The local varieties of bromidrosis affect the regions in which the sweat is oftenest secreted in excess and its immediate evaporation prevented, as in the axillæ, the groins, the feet, the anogenital and the intermammary and inframammary regions. In a qualitative sense every degree of odorousness is noted, from that which is merely slightly agreeable or offensive to the most intolerable stench. When complicated by a seborrhœa in situations where the parts are not only warm, moist, and covered by clothing, but also subjected to friction and remaining uncleansed, the most intolerable and nauseous fœtor is perceived.

Sweat may be effused in a normal condition upon and within the articles of clothing worn, and subsequently generate a stench by chemical changes both in the clothing and the fluid by which that clothing is saturated. This fact should never be forgotten in the practical management of any case.

Etiology and Pathology.—Thin has recognized micro-organisms (*Bacterium fœtidum*) in sweat obtained from the feet. Parkes concludes that the only cause of the disease is the covering of the foot, as soldiers with uncovered feet do not suffer from this affection. It

is occasionally due to emotional causes, to chronic alcoholism, or to the gouty state.

Treatment.—The treatment of bromidrosis is in general that of hyperidrosis already described. Formalin solutions in the strength of from 1 to 10 per cent. in alcohol are of the greatest value. They should be followed by the use of boric acid in powder externally. Thin¹ successfully employed stockings and cork-soles thoroughly dried after being saturated for hours in a jar containing a solution of boric acid. The efficacy of this measure he ascribes to the fact that the odor is the result of the development in the secretions of the *Bacterium foetidum*. An ointment is also employed by him for similar purposes; it is a solution of boric acid in glycerin incorporated with a fatty basis of white wax and almond-oil, making thus a “glycerated cream of boric acid.” Armingaud, of the French Academy, has reported excellent results following the subcutaneous injection of 3 grains (0.20) of pilocarpine nitrate eight of which operations were successful in lessening the abnormal sweat-fetor. Clement Hawkins² finely triturates 15 grains (1.) of red lead oxide, and to this adds gradually 1 ounce (32.) of Goulard’s extract. This preparation is used as a lotion following a nightly foot-bath containing 1 ounce (32.) of alum.

Fox³ advises a 1 per cent. solution of chloral or of potassium permanganate as a topical application.

Internally sodium salicylate has been employed with success in 5-grain (0.33) doses.

CHROMIDROSIS.

(Gr. *χρῶμα*, color; *ὕδωρ*, water.)

(EPHIDROSIS TINCTA. *Ger.* and *Fr.*, CHROMIDROSE.)

By this term is indicated the condition in which effused sweat exhibits an abnormal color—yellowish, reddish, greenish, or blackish. Cyanhidrosis is the term that has been employed to indicate blue sweating.

In cases of chromidrosis there has usually been a copious secretion of fluid. Authors have variously attributed the color of the sweat to the presence of compounds of phosphorus, iron, cyanogen, indican, Prussian blue, hæmatin, chromogen, and even to parasitic vegetations upon the skin-surface. Women, much more often than men, exhibit the free deposit of pigment upon the skin, and in view of the admitted rarity of chromidrosis the suspicion arises that in some of the cases reported there was free pigmentation of the surface, by which the fluid exuded was immediately stained or colored. Duhring reports a single case of red sweating in a vigorous male patient. Usually, however, the phenomenon occurs in persons who are debilitated and betray some evidence of impairment of other organs than the skin, thus furnishing an indication for treatment.

Babesiu,⁴ of Pesth, reports some interesting cases of this disorder

¹ Practitioner, December, 1881, p. 2101.

² Brit. Med. Jour., May 7, 1881.

³ Loc. cit.

⁴ Lancet, 1862.

in which the symptoms were due to the presence of bacteria, a fact confirmed by us in several instances. In eight patients, three of them women, there was considerable pruritus with pale-red to blood-red sweat; in one of the patients the skin and hairs were reddened. The axillæ were the seat of this colored perspiration. In all the cases microscopical examination revealed similar changes. The hairs of the axillæ were thin, pale red, brittle, and surrounded with a colloid-looking, rusty, or bright-red sheath, in places of considerable thickness and having a rough surface. This sheath consisted of red masses presenting a radiating striation, more or less confluent, apparently proceeding from fibres of the cortex of the hair or from some broken part of its surface. The radiating striation was found to be due to the aggregation of round or ovoid bacteria (scarcely a micro-millimetre in diameter), which were united in zoöglæa masses by a reddish intermediate substance. Nodular swellings on the hair were produced by the infiltration of the organism between the separated fibrils. The roots of the hair were free from bacteria. The red tint of the sweat was found to depend upon numerous roundish masses of zoöglæa.

T. C. Fox¹ reports also two cases of CYANHIDROSIS in which a deep bluish-black pigment was exuded upon the skin of the circumorbital region. The amorphous granules were found insoluble in almost all hot or cold reagents, but they displayed a deep-blue color when moistened with glycerin, and a purplish hue when dissolved in hot sulphuric acid.

Mitchell² describes an unusual case under the title of "Seborrhœa Nigricans," in which there was a dark greasy-looking discoloration of the eyelids and adjacent skin.

The hypothesis, that certain cases described as chromidrosis are really instances of mechanical washing of pigment to the surface in the profuse sweating of the debilitated, is strengthened by the phenomena of simultaneous hair-coloration. Thus, Prentiss³ reports the case of a young woman, affected with acute cystitis and passing purulent urine, whose hair, under the influence of profuse sweating induced by the action of pilocarpine, changed speedily from a light blonde to a nearly jet-black hue. At the meeting in 1881 of the American Dermatological Association we exhibited hairs of a middle-aged man that had changed in a night from a grayish-white to a greenish and yellowish-brown hue. White, of Boston, has observed several similar cases of hair-coloration as the result of profuse sweats. In the year 1884 this observer reported to the Association the case of a workman in a sugar-refinery whose sweat from the left side of the body was of a bright-yellow color for several months. Though sought for, no bacteria were discovered.

In a case observed by Bergmann a mycelium was recognized which was subsequently cultivated. Eberth has recognized bacteria in both normal and yellow sweat.

¹ Med. Press and Circ., Jan. 1, 1881.

² Phila. Med. Jour., Jan. 15, 1898.

³ Phila. Med. Times, July 2, 1881.

Le Roy de Méricourt, first to name this disorder,¹ also² described a case of rosy sweating in an infant.

Féréol believes that in these cases there is actually an absence of sweat, and prefers to call the disorder "chromocrinia."

In all cases, before accepting statements of patients as to the existence of symptoms of this character, it is needful to eliminate the possibilities of deceit and accident. Coloring-matters received upon the hands may be either wilfully or ignorantly transferred to the surface of the body.

Greenish sweating, due to the presence of copper in the system, has been reported in a few instances. We have observed one case of this disorder in which the effect was produced by the copper plate of an electrode in contact with an abraded surface of the skin.

PHOSPHORESCENT SWEATING is reported to have occurred after the eating of phosphorescent fish and the ingestion of phosphorus for medicinal purposes.

The **Treatment** of these several conditions is that of the general state of the patients exhibiting these symptoms.

URIDROSIS.

(Gr. οὖρον, urine; ὕδωρ, water.)

(Ger., HARNSCHWEISS; Fr., URIDROSE.)

Uridrosis is that condition in which some of the constituents of the urine, chiefly urea, are excreted in excess with the sweat.

While a small amount of urea is to be recognized in normal sweat, this ingredient under peculiar conditions may be increased, and, together with urinary salts, be deposited upon the skin-surface after evaporation of the exuded fluid. Such symptoms have usually occurred either as the result of grave constitutional affections (such as cholera), or of organic renal diseases accompanied by anæmia, or of the ingestion of jaborandi. In a few cases the symptoms have been presented in individuals who were apparently in good health. The salts of the urine appeared upon the skins of these patients in the form of minute lamellæ, or of a fine powder of whitish color and crystalline aspect. In some cases reported the symptoms have been noted to precede by a few days a fatal issue.

The constantly adjusted equilibrium between the sweat-secretion and the urinary excretion would explain, for cases of a mild type, temporary augmentation in the urea found in the sweat of unusually free diaphoresis. Geber supposes that decomposition-products, such as ammonium carbonate, possibly in association with volatile fatty acids, may in part account for these conditions.

In the effort to eliminate certain substances accidentally or purposely introduced into the system the sweat may possibly become charged with iodine, turpentine, tar, arsenic, and other substances. Several of the eruptions described in the chapter on Dermatitis Medicamentosa are due to a similar eliminative effort, especially those accom-

¹ Arch. gén. de Méd., November, 1857.

² La France Méd., 1884.

panied by excessive sweating and the production of vesiculation. In the same manner it may be inferred that the sweat is at times charged with excrementitious and other products of the body ; as, for example, the elements of the bile. In patients affected with yellow fever the skin and even the sweat which exudes from it often exhibit the characteristic hue of that disease. The so-called GALACTIDROSIS, from supposed metastasis of milk, does not occur ; cases thus described have been instances of pathological sweat in the puerperal state.

HÆMATIDROSIS, or bloody sweat, reported as observed by several authors (Foot, Ebers, Parrot), is the name applied to conditions in which blood has been seen to exude from an unbroken skin. The phenomena described under this title belong properly to the ensemble of symptoms called "hæmophilia," and may in some cases be due to direct transudation of red and white blood-corpuscles and fibrin into the inter-epithelial spaces traversed by the sweat-pores. Geber points to the neuralgic, hyperæsthetic, pruritic, or emotional symptoms that are usual precursors to the flow of pale or bright-red blood. The fact that patients thus affected are mostly women, hysterical, dysmenorrhœic, or near the puberal epoch, also throws light upon these cases ; in many of them petechiæ, or signs of hemorrhage into other tissues of the body, are observed.

HIDRADENITIS SUPPURATIVA.

(HYDRADENITIS DESTRUENS SUPPURATIVA ; FOLLICULITIS EXULCERANS ; SPIRADENITIS UNNA ; ACNITIS BARTHÉLEMY ; HYDROSADENITIS DISSEMINATA SUPPURATIVA (DUBREUILH).)

This disorder was described in 1864 by Verneuil, and since then has been observed by Dubreuilh,¹ Pollitzer,² and others.

The lesions begin as deep-seated, firm, shot-like, uncolored, insensitive nodules over which the skin is movable and unaffected. Each nodule slowly enlarges for a week or longer until it attains the size of a pea and becomes soft, slightly painful, and attached to the skin, which is then reddened. On puncture the lesion gives exit to a drop or two of pus ; but if left to itself it becomes yellowish, bursts spontaneously, and becomes covered with a dirty adherent crust which soon falls, leaving a pigmented spot, and ultimately a slightly depressed scar.

The most common sites of the disorder are the regions of the axillæ, anus, nipples, scrotum, and labia majora. In these parts the lesions may be single or more numerous. They occur also in large numbers over other parts of the body, especially on the face, scalp, neck, buttocks, and extremities. No cases have been reported with lesions on the soles.

Occasionally several nodules coalesce to form a flat tumor with a number of openings ; or the small, firm lesions of the first stage may persist as such for months, terminating in absorption. The disease is

¹ Arch. de Méd. expér. et d'Anat. pathol., 1893, i.

² Jour. Cutan. and Gen.-Urin. Dis., 1892, p. 9. Also, Morrow's System, vol. iii., p. 771.

usually chronic in its course, and with successive lesions or crops of lesions may endure for months or years.

Etiology and Pathology.—As predisposing causes should be counted all conditions, general or local, which tend to lower the vitality of the tissues. The origin is unknown, though it is probably to be sought in local infection or in the action of some toxic agent excreted by the coil-glands.

The process has been shown to be a diffuse inflammation of the coil-glands and periglandular tissue, usually terminating in necrotic sup-puration and destruction of the gland. No micro-organisms have been recognized in the cases examined.

Treatment.—The general condition of the patient should furnish the indications for the treatment of each case. Locally the nodules should be opened and dressed antiseptically. The disease is stubborn, but eventually terminates in recovery.

Primarily the coil-epithelium undergoes changes which are responsible for the cellular infiltration of the peripheral tissue.

2. DISORDERS OF THE SEBACEOUS GLANDS.

SEBORRHŒA.

(Lat. *sebum*, tallow; Gr. *ῥέω*, to flow.)

(STEATORRHŒA, ACNE SEBACEA, DANDRUFF, SEBORRHAGIA, SEBACEOUS FLUX, STEARRHŒA. *Ger.*, SCHMEERFLUSS; *Fr.*, SÉBORRHÉE.)

The clinical phenomena described under the title of seborrhœa are not due solely to a catarrh of the sebaceous glands, but result from several different pathological processes in which the coil-glands and epidermal layers are more or less involved. In the absence of sufficient knowledge of the pathology of these conditions they are in these pages considered chiefly from a clinical standpoint. The inflammatory processes in which the fat-producing glands seem to play an important part are described under the head of eczema seborrhoicum.

Symptoms.—Seborrhœa occurs in two forms. According to the condition of the excreted product, they are described as seborrhœa sicca and seborrhœa oleosa. These two forms are recognized clinically as of separate occurrence, and also as existing occasionally at the same time in one person. Either form of the disease may be limited to certain sites of preference, or be generalized so as to extend over all portions of the body provided with sebaceous glands. The commonest seats of the disease are: the scalp, the face, the genital region, the dorsum of the body between the scapulæ, and the anterior surface of the chest. It appears at all periods of life and in both sexes. As the sebaceous glands are mainly appendages of the hair-follicles, the lesions of the disease differ somewhat according as they exist in the regions covered with long or with lanugo-hairs. For the same reason a difference marks the career of the disease. At times it is a trivial and short-lived affection; at other times it is persistent and intractable,

lasting for years and possibly for a lifetime. The individuals thus affected exhibit a difference also with respect to the condition of general health. Some are anæmic, chlorotic, or asthenic; some are of sanguine temperament, fleshy, red-faced, and thick-skinned; others again are absolutely healthy, so far as can be discovered, except for the local sebaceous disorder. The latter fact is of some significance. One may see extreme types of seborrhœa in vigorous men who have worn merely for one month a skull-cap to which was fastened an apparatus for relief of fracture of the lower jaw. The skin affected with a seborrhœa is usually anæmic, and is either dry or humid. The subjective sensations are either slight and limited to a moderate degree of itching, of which the patient does not complain until he is questioned upon the subject, or these sensations are altogether wanting. At other times the glands or periglandular tissues are affected with a mild form of inflammation, and then the involved surface may be reddened and become the seat of a considerable pruritus.

Seborrhœa Oleosa.—This form of seborrhœa, variously known as hyperidrosis oleosa (Brocq), seborrhœa simplex (Unna), stearrhœa simplex (Wilson), *acné sébacée fluente*, etc., is in its pronounced features rarer than seborrhœa sicca, but to a less degree it is a condition sufficiently common in many forms of the disease. The sebaceous secretion is exuded as an oily fluid upon the surface both of the hairy and so-called “non-hairy” parts of the skin. In the former situation, both in adults and infants, the free oily substance is seen to cover as a coating both skin and hairs, and, especially in bald adults, to produce a glistening and shining appearance of the scalp. The secretion often concretes into masses, forming the crusts of seborrhœa sicca. The same greasy layer can be seen over the non-hairy portions of the skin, especially about the nose, forehead, and cheeks. Free drops of oil can occasionally be wiped from such surfaces with a handkerchief. The ducts of the sebaceous follicles here are either patulous or plugged with comedones; the skin-surface may be reddened or be pallid, but it is usually cold to the touch. The oily substance serves to entrap particles of dust, soot, etc., floating in the air; thus a peculiarly dirty or even blackish hue of the face is often produced. This form of seborrhœa, though most common on the face and scalp, may occur on the chest, the back, the pubes, the genitals, and rarely on the other parts of the body. In the negro, in whom the sebaceous glands are usually well developed and active, the oily forms of seborrhœa are common, and the flux at times is practically physiological. Even in the absence of their frequent anointing with palm-oil, one can see in Africa naked blacks whose skins shine from exuded grease.

Subjective symptoms in seborrhœa oleosa are usually slight, though a moderate amount of itching is commonly present. On the scalp the disease often produces an alopecia which does not, as a rule, respond readily to treatment.

Seborrhœa Sicca.—Seborrhœa sicca, as the term is generally accepted, varies greatly in its manifestations, but in general its features may be divided into the scaling and the crusting form of the disease. The scaling form, variously known as seborrhœa furfuracea or pityriasiformis,

pityriasis simplex, eczema seborrhoicum, eczema squamosum, etc., is most common on the scalp, in which region it is popularly known as "dandruff." Seborrhœa capitis in its commonest form is recognized in the adult by the formation on the scalp of fine, branny, slightly greasy, white or grayish scales, which may be so abundantly shed as to fall freely and cover the shoulders of the patient whenever the hair is brushed or otherwise disturbed. At other times these fatty scales are more or less adherent to the scalp-surface, or are piled up in laminæ one upon another. These scales may mat the hairs to the scalp or be disseminated through the mass of the hair, some of the hairs penetrating a flattened greasy scale, as a twig might be passed through the centre of a leaf. In consequence of their deprivation of unguent the hairs to which the affected glands are accessory become dry and lustreless, and fall from their follicles. If the process be not arrested, atrophy of the hair-follicles ensues, the resulting alopecia becoming permanent.

Fortunately, the seborrhœa is usually symmetrical, and, in like manner, the baldness which it occasions. The resulting disfigurement is of the character of symmetrical senile alopecia, which is chiefly annoying because of the premature loss of hair. When this loss is asymmetrical, which is decidedly exceptional, the disfigurement is greater.

The affection may be circumscribed, and in conspicuously exhibited patches covered by thin, mealy, grayish or whitish scales; or thick yellowish masses may paste the hairs firmly to the surface of the scalp. The disease may extend uniformly over the entire surface of the scalp, or, as is frequently noticed, may fringe the brow at the line of the hairs and then extend chiefly over the vertex, being conspicuous at the line where the hairs are parted from vertex to brow.

Beneath the scales or crusts of dried sebum the scalp is usually lustreless and of a slate-gray color. As the disease does certainly at times exhibit intermediate between functional and inflammatory forms, the adjacent tissues may present a hyperæmic or even an exudative feature, with true epithelial desquamation and considerable itching—alopecia pityroides, pityriasis simplex. One group of cases, assignable to this class, deserves mention. In these cases there is a tolerably well-diffused seborrhœa sicca of the scalp, and irregularly distributed over the surface are filbert-sized, generally circular, dark-reddish patches, covered with a moist secretion or a friable, granular, reddish-yellow crust. These patches are scalp "excoriations" produced by the finger-nails. They are most common in "nervous" patients, who cannot resist forcibly digging the scalp on the slightest provocation.

The eyebrows, the region covered by the beard, and the pubic hairs may be affected, although less frequently, in the manner described above. In the latter region the itching is often more severe than when the disorder is limited to the scalp. The disease not infrequently extends from the scalp to the adjacent portions of the face, neck, and ears. In these situations the skin is usually slightly reddened, while the scales are thin, adherent, and not very abundant. These features may appear

on the portions of the face more distant from the scalp, and on other parts of the body, in the form of dry, roughened patches which scale more or less, but which are only slightly, if at all, reddened. On such surfaces the condition may shade insensibly into those described under *eczema seborrhoicum*.

The crusting forms of *seborrhœa* may occur on any of the hairy or non-hairy parts of the body, but are most common on the scalp and face. Occurring in infancy, the disease is known as "milk-crust," or as *crusta lactea*. This may merely be persistence of the dried vernix caseosa about the vertex in the newborn, or it may occur in scalps which have been perfectly cleansed after birth. The crust differs somewhat in color with the tint of the child's complexion, and may vary from a light yellow to a dark brown; it may be thick, greasy, and mat the hairs; or be thin, dry, and friable. This crust is a frequent complication of the *eczematous* disorders of the scalp, and, as a consequence, every variety of hyperæmia and inflammation may affect the tissue beneath the crust. In infants and children, however, the resulting alopecia is never permanent, as the rapidly growing follicles hasten to reproduce the hair. The disease is neither contagious nor followed by cicatrices, points upon which mothers are usually solicitous. The region of the brow, the surface covered by the beard of the male, and the pubic hairs may be involved in this type of the disease, though less frequently than in the *furfuraceous* form.

The so-called "flower-leaf" type of *seborrhœa* (*petaloides*) is seen chiefly upon the anterior and posterior surface of the upper part of the trunk, especially over the sternum and between the shoulders. Here occur sharply defined patches slightly elevated at the margin, reddened in various shades, the color diminishing from periphery to centre. The resemblance to a flower-leaf is in many cases striking; often a clover-leaf is suggested by three foliate patches united more or less distinctly at a common point. These features are more often encountered in men with a hairy chest, the faintly reddish patches gleaming between the thick and strong pilary filaments. In all these cases careful examination will reveal the *seborrhœic* state of the patient either by discovery of a *seborrhœa* of the scalp, or of *acne* of the face, etc.

On the face this form of *seborrhœa* is characterized chiefly by the accumulation of thick, dirty-yellowish, and even yellowish-black accumulations of sebaceous matter, often adherent to the surface and disfiguring the features by the mask produced. This condition is conspicuous about the nose, where the disease is at times symmetrically disposed. The crusts once removed, the skin beneath is generally found to be pallid or slightly reddened, with the orifices of the sebaceous ducts patulous; while the under surface of the separated crust is seen to project downward in corresponding delicate prolongations comparable to stalactites. The crusts rapidly reform when the disease is not arrested. They are found in the furrows on either side of the nostrils, on the brows, the cheeks, and the pavilion of the pinna of the ear. They are most common at the puberal epoch in both sexes, when the sebaceous glands of the skin undoubtedly sympathize with the changes occurring at the beginning of the sexual life.

Seborrhœa may affect the eyelids, which are then reddened, slightly swollen, and in various degrees covered with minute crusts (less frequently with scales). The eyelashes often fall, and in cases of long standing their loss may be permanent owing to atrophy of the follicles.

Seborrhœa of the umbilicus assumes special features, since the fatty matters in this region are remarkable for their tendency to speedy decomposition, with the production of an exceedingly fetid odor, which may prove to be the source of a mild grade of inflammation. In the latter event a reddish halo surrounds the umbilical depression, which may furnish a thin sero-purulent discharge.

Seborrhœa of the genitals in men is usually located in the sulcus behind the corona glandis, though in individuals with a tight or a redundant prepuce it may be more extended. In women the accumulation occurs about the clitoris and vestibulum, though the external labia may be covered with the secretion in various degrees of fluidity. The smegma preputii supplied by the glands of Tyson may thus be the source of trouble either by its retention or its secretion in abnormal quantity or quality. In either event the tendency, as in umbilical seborrhœa, is to decomposition, fetid odor, and subsequent irritation, which may provoke inflammation of severe grade. The retention of this smegma beneath a tight or a redundant prepuce in men may be the cause of many reflex symptoms, such as incoördinated movements of the lower extremities, nocturnal enuresis and pollutions, hernia, and irritability of the testis. In some cases the secretion forms a ring (as hard as the rind of cheese) encircling the glans. It should be remembered that the young of both sexes as well as adults are liable to be thus affected, and that in young female children these symptoms may have a medico-legal interest in connection with suspicion of criminal assault.

Seborrhœa generalis, affecting the entire surface of the body, is an exceedingly rare disorder. In the infant (*SEBORRHŒA SQUAMOSA NEONATORUM*, *ICHTHYOSIS SEBACEA*) the skin is universally spread with a greasy layer, which is rapidly renewed after removal, and beneath which the skin appears to be varnished in reddish-brown shades. The consequent stiffening of the integument produces painful fissures, inability to take the nipple, and consequent marasmus.

In adults the disease may occur in marasmic subjects and in old people in the form of a persistent fine scaling on the trunk and extensor surfaces of the limbs, and is known as "*Pityriasis Tabescentium*." A yet rarer form is described by Kaposi under the name of "*Cutis Testacea*," in which large portions of the skin, especially the extensor surfaces of the limbs, are covered with greenish-brown or blackish crusts which are more or less broken up into plates.

Etiology—Seborrhœa is probably parasitic in its direct origin, but may depend in part upon other conditions which act as predisposing causes. Many cases of seborrhœa occur in young male and female subjects affected with chlorosis or conditions analogous to that state. Other cases are essentially of local origin. A seborrhœa can be produced artificially in a healthy individual in the course of a few weeks

by simple local measures without interference with the general economy. Women with long hair are usually disposed to take special care of the scalp upon which it grows. Men with short hair attend chiefly to its disposition upon the head, and often neglect the care of the scalp. Such neglect is sufficient cause in some cases to produce seborrhœa sicca of this region. In certain types of the disease, and especially in those occurring on the non-hairy portions of the skin, chlorosis, struma, malnutrition, obstinate constipation, disorders of digestion and menstruation, and sedentary habits of life are present as predisposing causes. The sebum of individuals who have fatty livers from chronic alcoholism is peculiarly fluid and oily; and few of the disorders of the sebaceous glands characterized by inspissation of the secretion occur in such persons.

Seborrhœa oleosa is found more frequently in persons of dark complexion, while seborrhœa sicca is more common in blondes. A family tendency to furfuraceous seborrhœa of the scalp and a resulting alopecia may often be noted.

Among the direct causes of this affection, as also of several other diseases of the sebaceous glands, may be named: the excessive use of tobacco; the wearing of stiff, heavy, and ill-ventilated hats; chronic alcoholism, gout, and syphilis.

Pathology.—Seborrhœa oleosa in its simplest form is a hypersecretion of the fat-producing glands. That the oil-glands are active agents in this process is now accepted.

Seborrhœa sicca has been supposed to be due to an abnormal functional activity and an imperfect fatty metamorphosis of the cells of the sebaceous glands. The fatty crusts, however, contain not only abnormal products of the fat-producing glands, but also exfoliated cells of the epidermis and hair-follicles. Most of the conditions described under seborrhœa sicca are primarily inflammatory and probably parasitic in origin, and in some of the simple pityriasic forms the sebaceous glands are not involved. Furfuraceous seborrhœa may exist for years without clinical evidences of inflammation.

According to Unna, alopecia precedes atrophy of the papillæ, and in the early stages is due to a choking of the upper part of the hair-follicles with horny cells. The bed-hairs are thus loosened from the follicle and shed, while the lower part of the follicles, the papillæ, and the papillary hairs are intact. As the process continues the follicles are gradually dilated and filled with horny cells to a greater depth, until the entire follicle, including the papilla, is atrophied and permanent alopecia results.

Many of the clinical symptoms and pathological facts related to all forms of pure seborrhœa have a close connection with eczema seborrhoicum, the chapter devoted to which should be consulted in this connection. The efforts made by Unna to establish a morococcus as the effective agent in the production of this group of affections have not been successful. The microbacillus of Unna and Sabouraud apparently bears a very constant relation to seborrhœal disorders, but its exact etiological position has not been determined. (See Alopecia Areata.)

Diagnosis.—Seborrhœa is to be distinguished from :

Eczema.—The objective points of difference between eczema and seborrhœa depend upon the inflammatory character of eczema, upon the reddened, infiltrated, or discharging skin, and upon the considerable itching which it occasions. In squamous eczema the scales are rarely so abundant as to be shed freely from the surface, and are not greasy. It should be remembered, however, that the two diseases often coexist. Inflammation of those parts of the skin well supplied with sebaceous glands usually assumes one of the types described as eczema seborrhoicum. Eczema of the scalp in infants is frequently accompanied by a seborrhœa, a fact which clearly shows that the technical distinctions between many diseases, useful though they be for analytical study, are not always capable of clinical demonstration.

Ichthyosis.—This is a congenital disease, usually involving the entire surface of the body, while seborrhœa is generally acquired and is rarely universal. The distinction between ichthyosis and the rare generalized forms of seborrhœa described above might involve a difficulty ; but in the latter the greasy character of the crusts, their color, and the marasmic condition of the subject would sufficiently distinguish the two disorders.

Impetigo.—The only possibility of error in diagnosis would occur during the crusting stage of impetigo upon the scalp. But impetigo is an acute disease, with comparatively small, circumscribed, and isolated lesions, with crusts differing in character from the sebaceous matters formed in seborrhœa, and beneath such crusts the integument is reddened and evidently the seat of an exudation.

Lupus Erythematosus.—Lupus erythematosus, though occurring on the face, is rare on the scalp ; it is accompanied by characteristic changes in the structure of the skin, and is often followed by a scar. Its lesions are darker red than the congestive patches beneath certain seborrhœas of the non-hairy parts. The scales of lupus are tenacious and dry, and require scraping for their removal ; those of seborrhœa are greasy and more readily detached. The contour of the seborrhœic patch is ill-defined compared with that of lupus, which is very distinct, exception being made of the mask-like crusts seen in certain of the facial seborrhœas, in which the greasy character of the layer is very evident. Hebra, in 1845, described a “seborrhœa congestiva,” which it would indeed be difficult to distinguish from lupus erythematosus, as the former is really an early stage of the latter. Typical cases of the two diseases are widely different and readily distinguished ; the atypical forms might lead to confusion.

Psoriasis.—Psoriasis of the scalp may resemble seborrhœa sicca, but the latter is rarely developed in such a universal exanthem as is frequent in the former. There will come under observation few doubtful cases in which a psoriatic patch on an elbow, a knee, a leg, or over the sacrum will not point to the nature of the disease. The scales of psoriasis are lustrous, larger, and not greasy unless fatty applications have been made to soften them ; and, moreover, they cover a reddened and exuding patch of integument. Psoriasis of the scalp and face prefers the areas of the forehead adjacent to the hairs of the scalp,

and rarely departs boldly to the nose and the furrows beside the nostrils—favorite sites of seborrhœa. In seborrhœa of the scalp the hairs are loosened and fall, a condition not present in psoriasis.

Syphilis.—Some forms of the pustular syphilodermata located upon the scalp and face, if observed only in the stage of crusting, might be confounded with seborrhœa. Here the history of the case, the discovery of other signs of syphilis (adenopathy, mucous patches, etc.), and the character of the secretion and the surface beneath the crust, together with the smaller size, more definite outline, and characteristic grouping of the lesions, should point to the identity of the disease. In syphilitic crusts about the angles of the nostrils there is often a peculiar reddish-brown tint of the skin at the edge of the patch, the so-called “copper” color, which is significant. Crusts of the hairy scalp in syphilis are very often accompanied by post-cervical adenopathy, and especially by indurated enlargement of the occipital glands.

Tinea Circinata and Tinea Tonsurans.—In ringworm of the hairy parts, as also of the body, the microscopical discovery of the parasite will always point to the nature of the disease. Upon the scalp the affected patches are seldom so diffuse as in seborrhœa, are usually circular, are often accompanied by fragility of the hairs, and in the latter case the discovery of stumps of hairs is significant. There are also a history of contagion and an absence of the greasy conditions of the scales characteristic of seborrhœa.

Treatment.—The general and internal treatment of seborrhœa should be varied to meet the requirements of the individual case. The preparations most often indicated are : iron in anæmic young women, cathartics in sluggishness of the bowels, and cod-liver oil when there is impairment of nutrition. Duhring recommends calcium sulphide in doses of from $\frac{1}{10}$ (0.0066) to $\frac{1}{5}$ (0.0133) of a grain. Arsenic, employed in the manner suggested by Sir Erasmus Wilson, is praised by Hebra :

R	Vin. ferri,	f ʒjss ;	45	
	Syrup. simpl.,	} āā f ʒij ;	8	
	Liq. potass. arsenit.,			
	Aq. destill.,	f ʒij ;	60	M.
Sig.	A teaspoonful to be taken three times daily with the meal.			

In many cases the acid iron mixture of Startin, or some modification of it, admirably meets the indications present :

R	Magnes. sulph.,	ʒij ;	60	
	Ferri sulphat.,	ʒss-ʒj ;	0.66-1	ʒ33
	Acid. sulph. dilut.,	f ʒij-f ʒiv ;	8-16	
	Infus. quassiaë,	ad f ʒiv ;	120	M.
Sig.	A teaspoonful in water, to be taken through a tube after eating.			

The preparations of matzoöl, malt, and maltine, now largely employed in the treatment of wasting diseases, will be found available in cases in which cod-liver oil cannot be well taken. Lastly, the bitter tonics may be needed. Throughout the treatment the physician should insure a careful observance of the laws of hygiene. Sunlight, nutri-

tious food, and open-air exercise are not to be disregarded. Many young women of indolent habits are greatly benefited by sending them daily to riding-schools for an hour's equitation.

In cases in which it can be tolerated, daily cool salt-and-water sponging of the entire body-surface, followed by brisk friction, may be employed with advantage. The salt is added to the water in the strength of $\frac{1}{4}$ pound to the gallon. There is no advantage to be gained by using the preparations of "sea-salt" sold in the shops. The bath is omitted during the menstrual period in women, and in the case of delicate patients. It is, without question, the most valuable of hygienic measures in the management of the disease.

The first indication to be met by local treatment in seborrhœa is the removal of the crusts and the fatty matters accumulated upon the surface. It is always well to warn patients, especially if the disorder be upon the scalp in an aggravated form and occur in young women with apparently luxuriant tresses, that a considerable loss of hair will result. Many of the hair-filaments are so impoverished by the disease and so loosened in their follicles that a complete cleansing of the scalp-surface will bring the hairs away in quantities sufficient to threaten speedy baldness; and it is not rarely the case that patients attribute this to the treatment rather than to the disease. The fatty accumulations are first to be soaked with some oily fluid to facilitate their removal; for this purpose olive-oil, cod-liver oil, vaselin, cold-cream salve, almond-oil, glycerin, or lard is usually employed. The substance selected should be used in quantity sufficient to permeate all crusts. It may be poured over or be rubbed into the scalp several times in the twenty-four hours, and at night a flannel or other cap should be worn. In the case of children and infants gentleness is required in thus treating the scalp, especially in the subsequent washings, lest the surface be irritated. In young women it is rarely necessary to cut the hair. As soon as the soaking with oil is complete the crusts are to be removed by washing with soap and water, though when the accumulations are bulky, masses may be gently removed with the fingers or a comb. When the scalp is tender ordinary toilet or Sarg's glycerin soap may be applied with warm water; but it is usual, in the case of adults, to employ the spiritus saponis alkalinus of Hebra—2 parts of green soap digested in 1 of alcohol, filtered, and flavored with lavender or bergamot. The surface should be thoroughly sponged with the spirit, and then warm water added until lather is abundantly produced over the scalp, when an excess of water is finally used to cleanse the part of crusts, oil, and soap. The scalp and hairs are then thoroughly dried and anointed with some bland, fatty substance if the exposed surface be tender and irritable; if not, with some stimulating pomade or lotion.

In cases in which milder effects are required the scalp may be washed with water containing such alkaline substances as borax, ammonia, or potassium carbonate. The popular prejudice against these articles is based upon the abuse of strong alkaline lotions in the hands of inexperienced persons. Such lotions may readily be tested by the tongue before use upon the scalp. They should in all cases be followed by

an oily or greasy application medicated to meet the requirements of the case.

The last-named precaution is an important one. However extensive the seborrhœic crusts, it is possible to remove them completely in every case by the measures described above, and with the first treatment patients are often delighted. Their disappointment is correspondingly great when they discover that the seborrhœa is not at an end, and that in the course of a few days the fatty plates are as freely as ever deposited on the scalp, disseminated through the hairs, and showered upon the shoulders. Some will even declare that the soapy applications aggravate the disorder by increasing the seborrhœa. It should, therefore, never be forgotten that, having disposed of the extraneous matters accumulated upon the surface, there is still to be remedied a functional disorder of the sebaceous glands of the part.

In every case, then, after the use of soap and water, which may be repeated as often as need be, daily, at intervals of several days, or once a week, the scalp is to be thoroughly anointed. For this purpose olive-oil, cod-liver oil properly scented, almond-oil, vaselin, or glycerin and water may be used. Van Harlingen recommends, as a substitute for other oils, the *oleum sesami* (oil of benne), since it does not dry and clog as do the former. An ounce (30.) of this oil rubbed up with 5 grains (0.33) of powdered benzoin, and digested for three hours over a water-bath, with the addition of 3 drops of absolute alcohol, and filtered, furnishes an excellent basis for oily mixtures to be used on the scalp.

Morison¹ has devised an ingenious instrument for the application of oily lotions to the scalp. The fluid is contained in a small reservoir, to which is connected a comb with perforated teeth; through the latter the substance selected for medication of the scalp readily passes down to the surface between the hairs. A medicine-dropper, though less convenient, will answer the same purpose.

In the place of oils after these ablutions pomades are often used with more advantage. For this purpose vaselin, lanolin, lard, and the zinc-oleate ointment furnish the best bases. To obtain the desired consistency, any one of these may be used alone or in combination with the others or with an oil.

Crocker advocates prior to the application of oily preparations to the scalp the use of a lotion containing acetic acid, the object being to aid the penetration of the remedy.

Of the many remedies employed and recommended, resorcin, sulphur, and the red oxide, bichloride, or ammonio-chloride of mercury are the most serviceable. Resorcin alone gives satisfactory results in the great majority of cases. This remedy may be used in a spirit lotion (from 25 to 75 per cent. of alcohol) in strength varying from 2 to 10 per cent., or in the form of an ointment, 10 to 60 grains to the ounce (0.66-4. to 30.). Lotions are well adapted to cases in which ether is little inflammation and in which decided stimulation is required. As they are cleanly and easy of application, they are more pleasing to most patients, and especially to women with long hair. Their efficacy

¹ Maryland Med. Jour., January, 1885.

is often enhanced by the addition of a small amount of oil. Mercuric chloride is admirably adapted for use in lotions. A good formula is as follows:

R	Resorcin.,	3ijss;	10	
	Hydrarg. bichlorid.,	gr. ij;	13	
	Ol. amygdal. dulc.,	3ij;	8	
	Tinct. cantharid.,	3ij;	8	
	Spts. vin. rect.,	3ij;	60	
	Aq. destill.,	q. s. ad f 3vj;	180	M.

Sig. To be rubbed into the scalp.

For this may be substituted $\frac{1}{2}$ ounce (15.) of resorcin in 2 ounces (60.) of alcohol and 6 ounces (180.) of rose-water.

Sulphur enjoys a high reputation in the treatment of all sebaceous gland disorders; in the form of an ointment, 15 grains (1.) to a drachm (4.) to the ounce (30.) of cold cream, it is often of service. One-half the quantity, or as much, of resorcin may often with advantage be added to the pomade. Sulphur may also be used as a powder, either alone or in combination with talc, salicylic acid, boric acid, starch, or camphor; and as a lotion with alcohol, glycerin, and rose- or cologne-water. The alterative effect of the mercurials is also as evident in seborrhœa as in many other cutaneous disorders. At the head of the list, for this special purpose, stands the red mercuric oxide in strength of from 2 to 4 grains (0.133–0.266) to the ounce (30.) of ointment; but ammoniated mercury, and calomel in the proportion of from 5 to 10 grains (0.333–0.666) to the ounce (30.), may be often substituted for the former with advantage. Carbolic, salicylic, and boric acids, from 1 to 5 per cent. in alcoholic solutions, with or without the addition of oil or of glycerin, are often of service. The tars are useful in many obstinate cases. Tar-soap may be employed in the washing; or oleum rusci added in the strength of 1 to 10 parts to any of the salves recommended above. Ichthyol in ointments of the strength of from 5 to 10 per cent. has also proved efficacious. Besides these substances, tincture of cantharides, capsicum, and nux vomica are frequently incorporated with advantage into lotions and pomades for use upon the scalp. Most of the pomades can be rendered sufficiently fluent for use in this situation by adding 1 or 2 drachms (4.–8.) of glycerin to the ounce (30.) of lard or of cold cream. An excellent formula for the scalp is the following:

R	Sulphur. præcipit.,	3j;	4	
	Lanolin.,			
	Glycerin.,	aa 3ijss;	10	
	Aq. rosæ,			
	Saponis,	℥ss;	80	M.

Sig. Ointment for scalp.

Veiel recommends:

R	Extra. cinchon. frig. par.,	℥j;	1	33
	Bals. Peruv.,	gtts. xv;	1	
	Cantharid. tinct.,	gtts. xxiv–3ss;	1.5–2	
	Succ. citri,	℥ xv;	1	
	Ung. pomat.,	3jss;	45	M.

Sig. To be rubbed into the scalp once or twice daily.

Repeated applications and patient care of the scalp are necessary to secure complete relief in the case of a disease as essentially chronic as seborrhœa. At times the local treatment may be changed with advantage. Not infrequently too vigorous treatment is followed by a more or less acute dermatitis. In this case stimulating preparations should be replaced by soothing ointments or lotions until the induced inflammation has subsided.

The treatment outlined above for the hairy portions may be used with success also for the relief of seborrhœa of the non-hairy portions of the body, especially the face. Here, it will be observed, the crusts have a tendency to re-form, and the most persistent treatment is necessary to secure permanent relief. Occasionally, after cleansing the surface with soap and spirit-lotions according to the indications of each case, it is of advantage to apply the ointment selected for subsequent application, not only by gently smearing it on the parts with the tips of the fingers (always the most effective method), but also by spreading it on a compress, which, for the night at least, may be fixed in contact with the part. Unna's lead-plaster mulls, used for this purpose in Germany, may fairly well be imitated by drawing strips of cheesecloth through heated diachylon ointment and then smoothly smearing them with the same material. When the tendency to re-formation of the crust is abated one or more of the dusting-powders may at times be employed with advantage for the purpose of protecting the skin or of exercising upon it an astringent effect.

Seborrhœa oleosa is best treated with lotions or with powders. Should the skin become irritated under these applications, ointments may be substituted for a time. Astringent lotions or powders containing tannin, gallic acid, zinc sulphate, ferrous sulphate, zinc oxide, bismuth subnitrate, etc., are often serviceable.

The local treatment of seborrhœa of the genitals is somewhat different. Ointments rarely answer well in disorders of the mucous surfaces, and green soap is too irritating for similar employment. Here washing with a good toilet-soap and warm water is sufficient for the purposes of cleanliness, and diluted lotions containing alcohol, in the form of whisky, brandy, or aromatic wine, suffice. These lotions can be made astringent with tannin, alum, or zinc sulphate, and when there is pain or tenderness opium may be added. In this form of the disease, as also in seborrhœa of the umbilicus, carbolic acid or chlorinated soda may be necessary to correct fetor. After the employment of these lotions boric acid with talc (1 part to 4), or zinc oxide and starch (1 part to 8), may be dusted over the part. In the generalized varieties of the disease the surface is to be thoroughly anointed with oil. The body, especially that of infants, is to be swathed in flannel or other good non-conductor of heat, and a roborant treatment directed to the general adynamia.

In the grave forms of seborrhœa of infants (described as keratosis sebacea, ichthyosis sebacea, etc.) the body must be kept anointed with oils or fats. Artificial feeding is demanded by the condition of the mouth.

Prognosis.—In forming a prognosis in cases of seborrhœa of the

scalp it must be remembered that the disease is frequently obstinate, and shows a decided tendency to recur unless some treatment be continued for weeks or months after the scalp is apparently well. The resulting loss of hair, if symmetrical, may be remediless, but much may be done in the way of saving the hair which is left. Facial seborrhœa is much more amenable to treatment; seborrhœa of the genitals and the umbilicus is an entirely manageable disease. When the affection is generalized the prognosis is in the highest degree unfavorable.

ASTEATOSIS.

(Gr. *a*, privative; *στέαρ*, fat.)

(*Ger.* and *Fr.*, ASTEATOSE.)

Asteatosis is that condition of the skin in which there is absolute or relative deficiency of the sebaceous secretion.

Symptoms.—Insufficient lubrication of the skin by its natural unguent may be either general or partial, and occur as an idiopathic or a symptomatic disorder. It is produced artificially by any agents which continually withdraw the fatty substance from the skin-surface, as in those trades necessitating the constant immersion of any part of the body in strong alkaline solutions or in waters strongly impregnated with calcium and potassium salts. As an idiopathic affection it is of rare occurrence, but it is not an infrequent accompaniment of other local or constitutional diseases, such as psoriasis, lepra, xeroderma pigmentosum, ichthyosis, and lichen ruber. In these cases the skin becomes dry, often thickened and indurated, and, as a consequence, friable, and prone to desquamation, fissures, and chaps. To the touch, the absence of sebaceous secretion is noticeable in the objective sensation produced. Asteatosis is a well-marked feature of the marasmus of old age. Some authors have described under this title the dry thickening and induration of the palm of the hand accompanied by curving of the fingers toward the plane of their flexor tendons, a condition that is occasionally to be observed in laundresses.

Pathology.—In cases of asteatosis the lumen of the coil-gland is commonly dilated, the epithelium is swollen, the loops of the coil markedly thickened, and there is produced a compression of the inter-tubular connective tissue, as Unna has shown.

Treatment.—No internal medicaments are known to have the power especially of stimulating the sebaceous secretion. None, indeed, could be capable of having such action when, as is often the case in the disorders characterized by asteatosis, there has resulted an atrophy of the sebaceous glands. For external application of an artificial unguent, cod-liver oil, almond-oil, lanolin, palm-oil, vaselin, lard, or butter may be employed. Vaseline is in many cases to be preferred, as the other articles named are liable to become rancid after oxidation, and thus act as irritants. Elliott prefers liquid albolene or benzol. With such partial or general lubrications, however, a warm bath of soap and water should be ordered every second or third day; immediately after the bath the inunction may be repeated.

Prognosis.—In all cases in which the asteatosis is induced by agents operating externally upon the surface a reasonable hope of recovery may be entertained after withdrawal of the cause. Persistence of the latter is liable to be succeeded by the occurrence of eczema or dermatitis medicamentosa. A complete cure can scarcely be expected when this condition is a symptom of one of the disorders already named.

COMEDO.

(Lat. *comedo*, spendthrift.)

(BLACK-HEAD. *Ger.*, MITESSER; *Fr.*, ACNÉ PONCTUÉE.)

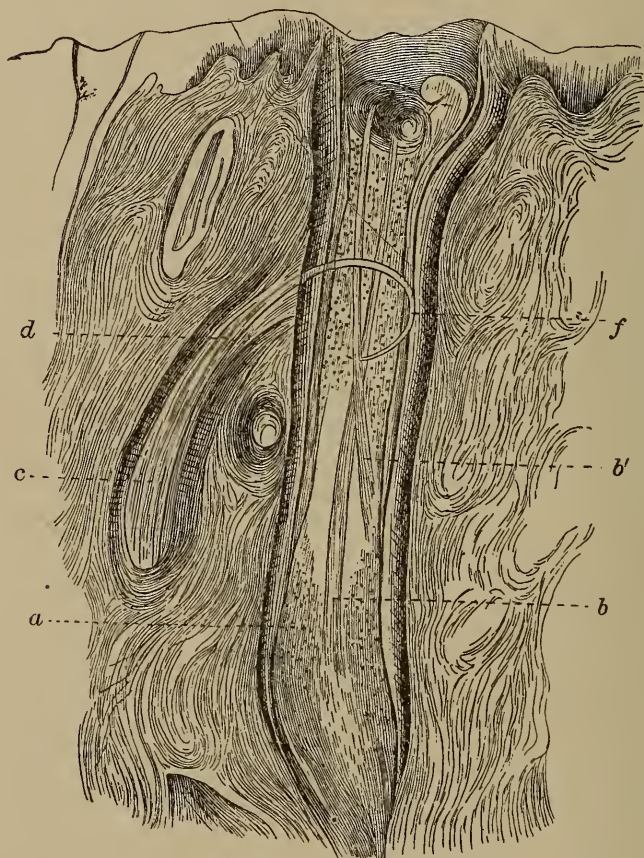
Symptoms.—Comedones, which occur exclusively in the ducts of the sebaceous glands, consist each of a whitish fatty plug formed by inspissation of the secretion of these glands, one extremity of the plug being visible at the surface when it is *in situ*. Occasionally the comedones project to an appreciable distance above the general level of the integument, but often the extremity of each plug is slightly depressed below that level. There may be but two or three comedones upon the face, which is their commonest seat; or the nose, forehead, cheeks, and chin, the front and back of the neck, the back of the trunk, and the penis may be studded with them thickly. The visible extremity of the comedo varies in size from that of a needle-point to that of a pinhead. Comedones are readily expressed from the follicles in which they are lodged, and when thus examined they are seen to be whitish moulds of inspissated sebum, one or two lines in length, the exposed extremity of each comedone having become blackened by diffused pigment deposited within. The popular idea that the black head of the comedo is produced by dirt entrapped by the sebaceous mass is without foundation. In consequence of this suggestive appearance of the lesion the disease has been called vulgarly “black-heads” and “skin-worms.” The deformity produced in the face when these lesions exist there in large numbers is strikingly conspicuous, and it is for the relief of this appearance chiefly that the practitioner is consulted. The subjective symptoms awakened are of trifling moment. The disorder is essentially chronic in its course. Isolated comedones may be observed for years in one situation without apparent change or modification of any sort, and without producing the slightest local or constitutional derangement. Others appear, only to disappear under the influence of the usual hygienic regimen of the skin of the face. Others, again, serve to irritate the skin in which they are implanted, precisely as though they were foreign bodies; and the sebaceous glands and periglandular tissues, with and without the operation of such cause, exhibit grades of hyperæmia and inflammation. Comedones may occur as the sole lesions of the skin, even to the extent of great multiplicity; or they may coexist with other diseases of the glands, chiefly acne. They may occur at any period of life, but, like seborrhœa, are most frequently observed at the puberal epoch in both sexes. The disease tends to disappear in women earlier than in men, in whose case it may be prolonged to the twentieth or thirtieth year.

Crocker¹ has called attention to the occurrence of comedones in children, with a special tendency to grouping in places subjected to heat and moisture, and also to their occurrence upon the hairy scalp.

Occasionally a so-called "double" comedo is formed, there being expressed from the skin a plug of inspissated sebum, each extremity of which is discolored. Whether this double comedo is due to a duplicity of efferent ducts in a single gland, or to an artificial or pathological connection between two adjacent glands, is not clear.²

Etiology.—Much has been written with reference to neglect of the skin as a cause of comedo, the non-employment of soap in washing

FIG. 35.



Section of a comedo: *a*, excretory duct of a sebaceous gland filled with a comedo; it contains also two small hairs with brush-like inferior extremities; into it opens a small hair-follicle (*c*); the contained hair (*d*), after touching the opposite wall of the duct, curves downward at *f*. (After KAPOSI.)

the face, and the influence of the trades, as in the case of those who work in metals, dust, and tar; but observation shows that these are exceptional causes. On the one hand, very obstinate and generalized lesions occur in the skin of intelligent young men and women of the upper social classes, who regularly wash their faces with toilet-soap, who are rarely exposed to dust, and whose habits and recreations are of the most healthful character. On the other hand, observing the grimy faces of coalheavers, machinists, masons, and ink-manufact-

¹ Lancet, April 19, 1884.

² Ohmann-Dumesnil: Jour. Cutan. and Ven. Dis., Feb., 1886.

urers, one is impressed with the rarity of the disease in such laborers. Other causes of the constipation of the gland are unquestionably to be sought for in most cases. It is true that chlorotic young women, affected also with dyspepsia and torpor of the bowels, may exhibit the disease; and it is equally certain that many cases occur in peculiarly thick-skinned brunettes, or in men with a characteristic reddish-brown and greasy-looking complexion. Nevertheless, many such individuals never suffer from comedones, while often a perfectly healthy, fair-skinned girl will be greatly mortified by the disfigurement of her face.

In yet other patients there is unmistakable connection between this disorder and chlorosis, scrofulosis, dyspepsia, habitual constipation of the bowels, menstrual derangements, and cachexia. This connection is demonstrated by the remarkable improvement manifested in the untreated skin when restoration of the general health is assured.

The microbacillus of Unna and Sabouraud may be found, as a rule, in the comedo-plug, but whether the bacillus causes or follows the formation of the comedo is an unsettled question.

Pathology.—The comedo is a dense collection of concentrically packed epithelial plates mingled with masses of cholesterin, with fragments of epithelia that have undergone fatty transformation, with minute lanugo-hairs, and occasionally, upon the exterior, with the *Acarus folliculorum*. This mite, first detected by Henle in the ceruminous glands, was by Simon and others once believed to be the cause of the comedo, a view now abandoned. This parasite, in persons upon whose skin it exists, can be detected in masses of commingled sebum and epithelial plates scraped from the free surface of the integument, as also upon the skin-surfaces of those who do not exhibit any disorder of the sebaceous glands.

The comedo-plug is located either in the excretory duct of the sebaceous gland or in the pouch-shaped canal common to the sebaceous gland and the hair-follicle. It is divided by horny septa, and when recent has a hollow "tail." The older and denser comedones have a horny extremity within the deeper part of the skin. It will be remembered that in the class of sebaceous glands chiefly involved in the comedo the hair-follicle is rather an appendage to the gland, the relation between the two, evident upon the scalp, for example, being here reversed. According to Biesiadecki, the hair-follicle in such cases often forms an obtuse or even a right angle to the duct of the gland, and the point of the hair being thus projected against the wall of the duct is occasionally curved downward upon itself, thus exciting irritation at the point of impact and subsequent multiplication of the protoplasmic elements lining the canal. Thus he explains the epithelial character of the outer envelope of the plug; the special occurrence of the disease at the puberal epoch, when, as is well known, there is an especially active growth of the hairs; and, lastly, the frequent discovery of lanugo-filaments in the expressed contents of the common excretory duct.

The blackness of the "head" is readily made to disappear when the extruded plug is treated with muriatic or nitric acid. It is to be

noted that the pigment thus rendered soluble extends for some distance below the exterior face of the plug.

Diagnosis.—The recognition of the disorder is attended with no difficulty, patients themselves being usually sufficiently observant to identify the affection, though frequently misled as to the character of the “skin-worm.” It is, as might be expected, a frequent coincident of acne; its lesions, when commingled with those of the disease last named, being either in preponderance or so infrequent as scarcely to attract the attention of the patient. A condition somewhat resembling comedo may be produced upon the face when tar or ointments of mercury and sulphur are applied to it at the same time, the resulting black sulphuret appearing conspicuously at various points upon the skin, often at the orifices of the sebaceous glands.

Treatment.—The internal treatment of patients affected with comedo is that described in connection with the subject of seborrhœa. Cod-liver oil, iron, the bitter tonics, and the medicaments indicated by any special condition of the patient’s health are not to be omitted. Open-air exercise, daily cool salt-and-water bathing, as in the management of seborrhœa, and the avoidance of all medicinal and dietary articles which might tend to aggravate the disorder, are also imperative. Many of these patients require at the outset alterative cathartics, among which may be named the pill of blue mass (taken for ten or more consecutive evenings, and followed by the effervescing sodium phosphate in the morning), calomel, cascara sagrada, and castor-oil.

Even aggravated cases of comedo are completely relieved when untreated in the course of time. The relief, however, may require years for completion. The rarity of comedones in middle life and advanced years sufficiently attests this fact. Presumably this natural cure is due to more vigorous growth of lanugo-hairs with the increment of age, which thus push slowly forward to the surface the excrementitious mass, until it is gradually removed by ordinary friction and ablution. Absence of comedones from the scalp, where the hair is vigorous, is certainly a significant fact.

Comedones are removed artificially with the aid of an extractor. The instrument formerly employed for this purpose was shaped like a watch-key, the cylinder having a smooth bore and bevelled extremity. This clumsy tool is far surpassed by the exceedingly convenient comedo-extractor designed by Unna and modified by Piffard. Each end has a convex bowl-like surface, with apertures cut to gauge and the orifices slightly countersunk. This extractor, “presser,” is productive of far less pain to the patient than other instruments, and can be wielded, on account of its long shank, with greater precision and ease by the physician. The surface to be operated upon is best previously moistened by spraying it with a solution of formalin (0.5 per cent.), of borolyptol, of thymol and glycerin, or of eucalyptol and glycerin. Often a sharp-edged or well-rounded needle, firmly held in a needle-holder, may advantageously be employed alternately with the extractor, in opening certain follicles or loosening the plug of others. Many patients affected with comedo are advantageously treated by the aid of the massering-

ball, described in the chapter on the management of Acne. All these instruments should be disinfected scrupulously before use. The danger of such manipulations should never be overlooked. There are good reasons for selecting the hour before sleep as the time for all vigorous topical applications to the face. Ointments then applied can be left in contact with the skin during the night, and the patient be at liberty to resume his usual vocation in the daytime, his face being free from conspicuous evidence of local treatment.

An ordinary watch-key, a curette, the thumb-nail, or a spatula may also, on occasion, be used in the extraction of comedones, which, if few, may be expressed at one sitting, or, if numerous, be removed on separate occasions. Repetition of the process is usually required owing to re-formation of the plugs.

Once the comedones are removed the skin should be sponged and bathed with hot water, then thoroughly dried, and anointed with an ointment which may be medicated to suit the indications of each case. Sulphur, as in all functional disorders of the sebaceous glands, enjoys here also the highest reputation. In the strength of 10 grains (0.66) to 1 drachm (4.) to the ounce (30.) of cold cream or vaselin, it may be applied as an ointment; or as a lotion, in combination with spirit of wine, glycerin, etc. A useful application is suggested by Piffard—equal parts of sublimed sulphur, alcohol, compound tincture of lavender, glycerin, and camphor-water.

Mercurials are also of some advantage locally, but, as before indicated, they should not be employed at the same time with preparations of sulphur. The use at night, especially in obstinate cases, of the white-precipitate ointment, or of one compounded of 2 grains (0.133) of the red oxide to the ounce (30.) of cold-cream salve, will often prove of benefit. In the case of coarser skins, corrosive sublimate, 1 to 2 grains (0.066 to 0.133) to the ounce (30.) of glycerin and rose-water, may be substituted for the red-oxide ointment.

When extraction of the plug is not attempted nor permitted, something may yet be done to remove the inspissated mass. Repeated sponging every third night with 1 ounce (30.) of green soap, digested in an equal quantity of cologne-water, will at first seem to render the comedo more conspicuous, but will slowly operate to dissolve the sebaceous secretion.

An ointment containing 4 parts of kaolin, 3 of glycerin, and 2 of acetic acid, with or without the addition of a small quantity of ethereal oil, may be applied at night for a few nights in succession, the eyes being carefully protected, when the black points of the lesions are removed, and the comedones are then readily extracted. Citric or dilute hydrochloric acid is employed with the same end in view. These topical remedies cannot be considered as efficient in every form of comedo.

Actors, actresses, and women of fashion will, while under treatment, occasionally persist in using various colored toilet-powders, the injurious ingredients of which are often the cause of the disease. The practitioner may then either refuse to be responsible for the care of the case, may substitute a harmless for a noxious powder, or may gently

anoint the face after his treatment of it with a bland ointment or the Lassar paste, upon the surface of which the theatrical effects are subsequently produced. In such cases the use of soap and water with each dressing is more than usually imperative.

Comedones of the penis need not be treated. This injunction is suggested by the occasional demand made upon the physician by the sexual hypochondriac, who regards these lesions with a degree of alarm which he can best appreciate who has been confronted with a case of this kind.

Prognosis.—As the disease naturally tends to spontaneous though occasionally long-deferred resolution, the prognosis is favorable. Treatment in most cases will accomplish much in hastening the disappearance of the comedones. The most obstinate forms are those in which the face, the back of the ears, the inside of the auricle, the neck, and the shoulders are studded with relatively small indolent comedo-points, about which the circular lip of the duct rises in a whitish rim. This rim, when felt with the finger, produces the impression of hyperplasia of the wall of the duct. Such cases, however, are nearly allied to the forms of acne described elsewhere. With exceeding rarity, the comedo is merely the introduction to a more serious local affection. In early life a single prominent lesion is formed, and though the plug be frequently removed and finally be no longer reproduced, the orifice of the duct remains patulous in middle life. Slowly thereafter its walls undergo a metamorphosis and a warty epithelioma may result.

MILIUM.

(Lat. *milium*, a millet-seed.)

(GRUTUM, STROPHULUS ALBIDUS, ACNE ALBIDA.)

Symptoms.—Milia occur upon and about the eyelids, the cheeks, the temples; the penis, scrotum, and corona glandis of men; and the internal face of the labia minora of women. They are millet-seed-to pinhead-sized, globoid masses, rarely attaining the dimensions of a coffee-bean, showing within the epidermis as though kernels of rice were lying there immediately beneath a translucent layer of tissue. They occasionally project from the surface to such an extent as to resemble small-sized vesicles having milky contents. In color they are yellowish and whitish. They are often congenital, and can be recognized about the lids and temples of the newborn infant; they are also seen, however, in middle life, when they develop very slowly, and sometimes persist for years. They are often observed in the neighborhood of cicatrices, which in such cases have usually been effective in their production. They occasion no subjective sensation, and are commonly so insignificant as to induce no deformity. They never degenerate by ulcerative processes, but when not artificially removed are, in the course of years, exfoliated in the natural processes of physiological desquamation.

Etiology.—Milia are at times produced mechanically: the stroke of a knife-blade, accidentally or in the processes of surgery, separating

one or more of the acini of a sebaceous gland from the main body. The contracting bands of a cicatrix, after destruction of tissue from any cause, may operate in a similar way with precisely the same result. They may occur in connection with acne, for which in many cases no cause can be found.

Pathology.—When a milium is incised externally a spherical body of nearly corresponding size may be expressed, though it may require tearing from a minute pedicle below, which represents the attachment to the hair-follicle. The small mass thus extracted is seen to be a horny cyst composed of several thin envelopes, suggesting the capsules of the onion and representing cornified epithelia which have not undergone fatty metamorphosis, and in the centre of which is a fatty nucleus. There is never any lobular formation. Each of these horny cysts is developed in connection with the lanugo hair-follicles, distending the latter, as Unna has shown, irregularly and on one side. The process represents a hyperkeratosis of the epithelium of the hair-follicles.

The epithelia from which the contents of milia are produced at times tend to develop into horny or other formations. Thus, Foster, of Boston, describes a case in which the process of calcification had apparently been complete; Wagner observed colloid contents in certain opalescent lesions which appeared on the cheeks and temples of a woman; Bärensprung and Hebra report numbers of acutely produced milia following pemphigus and erysipelas; and Virchow and Rindfleisch describe milia of the hair-sacs and similar lesions accompanied by cysts of the adjacent hair-follicles. In some cases the cause of milia is to be sought in obscure changes by which the epithelia of the follicle are primarily affected.

Robinson believes that milia originate from miscarried embryonic epithelia from hair-follicles or from the mucous layer of the epidermis.

Diagnosis.—Milia might be mistaken for minute vesicles containing a milky fluid, but puncture of the lesion, with expulsion of its contents, at once discloses their character. Comedones with blackish external points, surrounded by the patulous orifice of the excretory duct and prolonged more deeply into the substance of the skin, could scarcely be confounded with milia.

The most minute of the lesions of xanthoma have a yellowish color, and cannot as readily be scraped away from the subjacent tissue as can milia.

Treatment.—Milia rarely require treatment, as they are usually relatively few in number, and produce neither subjective sensation nor deformity. If desired, they may be opened with a fine milium-needle and their contents turned out, or they may be scraped off with a curette. To insure their non-recurrence, the little sac left after the operation may be entered with a needle which has been dipped in a 50 per cent. solution of chromic acid. This operation may have to be repeated in the rare cases in which the lesions exhibit a tendency to recur.

The simplest and most elegant method of removing these and many similar-sized lesions of the skin is by the galvanic battery. With from four to six cells in the circuit the negative pole is connected with a fine needle, which is introduced within and beneath the lesion, while the moistened sponge of the positive pole is in contact with the skin of

the patient. This operation is bloodless and effectual, insignificant scars resulting.

The **Prognosis** is always favorable.

STEATOMA.

(Gr. *στέαρ*, fat.)

(WEN, PSEUDO-ATHEROMA, SEBACEOUS CYST.)

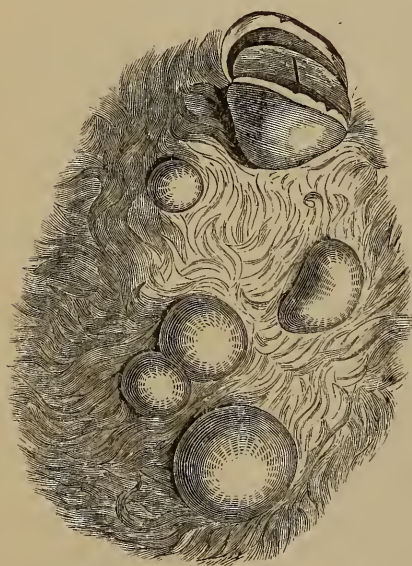
Symptoms.—The history of the development and career of wens does not greatly differ from that of milia, already described. Wens are usually of slow growth; unattended by subjective sensation; occur as single or multiple, fixed or movable tumors on the head, the trunk, or the genitals; and, being larger than milia, may attain the size of a hen's egg. Centrally or laterally placed is usually seen on the surface of each a patulous orifice closed with a blackened horny plug suggesting a giant-comedo. They are situated beneath, within, or upon the skin; are usually unattached to the deeper contiguous tissues; and develop into irregularly globular, occasionally large button-shaped masses, covered by an integument usually unprovided with hairs. This envelope may be normal in hue, or unnaturally whitish from pressure; or, especially upon the bald scalp of certain fleshy men of middle years, reddened, shining, and greasy in appearance. Their semisolid cheesy and milky contents often emit a nauseous odor. At times the cysts are to be distinguished only by passing the fingers through the long hairs of the scalp beneath which they are hidden; at other times they are so conspicuous in consequence of physiological alopecia as to occasion considerable disfigurement. They vary greatly in consistency,

but usually produce to the touch a certain feeling of elasticity, especially if the cyst be tensely distended. They are rarely attacked by inflammation, resulting in suppuration and ulceration.

Tumors of this kind may be exceedingly numerous. MacLaren's patient,¹ a lad nineteen years old, exhibited tumors over the entire surface of the body; they proved on examination to be sebaceous cysts, but they presented all the appearances of multiple fibromata.

Pathology.—Wens represent distention of the sebaceous glands by their contents, and response to the constant pressure in hypertrophy of the glandular envelope. Their contents, which are semisolid, curdy, cheesy, and granular, fluid and milky, or fluid and purulent, are the inspissated or chemically altered products of the gland-secretion, recognizable as such by

FIG. 36.



Cysts of the scalp, one of them being laid open to show its contents. (Gross.)

¹ Brit. Med. Jour., Oct., 1886.

the materials of which they are composed—masses of fat and *débris* of epithelia, with an occasional lanugo- or undeveloped hair.

In some cases wens are more than mere retention-cysts, a benign new-growth of connective tissue forming the mass of the tumor. Calcareous and atheromatous changes in the contents of the cyst are common. Török, Chiari, and others claim that the majority of these growths are really dermoid cysts. Török found a true papillary body in the walls of many of these cysts, and states, furthermore, that such cysts contained no fat.

Diagnosis.—Steatomata are to be distinguished from true atheromata by observing that the latter exhibit no opening, never have odorous contents, always originate in the hypoderm, and frequently occur in portions of the skin other than the scalp. Steatomata are also to be distinguished from fatty tumors, which, however, are more commonly observed about the scapulæ, loins, buttocks, and extremities; while wens are very rarely found except about the scalp and neck; they lack also the peculiar “pillowy” feel of fatty tumors. Suppurating wens in the regions named may readily be mistaken for circumscribed abscesses if regard be not had for the history of the tumor usually long preceding. Syphilitic nodes of the same parts are usually both tender and painful; osteomata are also firmly attached.

Treatment.—The removal of a wen is accomplished by excision, after previous puncture of the sac and removal of its contents.

With antiseptic precautions ablation of these lesions from any part of the body may be regarded as unattended with great risk. Several fatal cases, however, are on record as the result of this operation, due not so much to the nature of the excised tumor as to its situation, surgical wounds of the scalp being particularly liable to erysipelatos and other complications. As the incision required for the removal of the wen must necessarily extend some distance on either side of the tumor, there results a linear scar, which on the bald scalp is often a very conspicuous relic of the lesion. In consequence of the possibility of danger many surgeons prefer destruction of a prominent section of the mass with acid or alkali, leaving the sac, after expulsion of its contents, to wither gradually, though it may then be often withdrawn with forceps.

Complete obliteration is sometimes effected by puncture, expression of the contents, and subsequent induction of artificial inflammation in the walls of the cyst by injection of tincture of iodine, pure sulphuric ether, or other irritating fluid, as in the operation for relief of hydrocele.

Prognosis.—The removal of the wall of the cyst is not followed by a return of the lesion. In debilitated and cachectic patients there may be spontaneous ulceration and sloughing, with or without surgical interference. Mr. Thomas Bryant¹ reports a carcinomatous tumor following the removal of a steatoma from the buttock of a woman sixty-three years of age.

CONGENITAL FIBRO-SEBACEOUS DISEASE.—Crocker reports two instances occurring in infants who at birth exhibited signs of the

¹ Brit. Med. Jour., May 13, 1884.

disease, in which patches with an area of "several square inches" were visible on the face, the front of the neck, and in front of and above the ear. These patches were slightly raised, of a pale reddish-yellow color, finely granular over the surface, and consisted of closely aggregated, pale-yellowish, pin-point-sized papules, the patches being sharply defined with many comedones at the borders. These growths, on section, seemed to be due to a fibrous hypertrophy resulting in atrophy of the hair-follicles and coil-glands, and separation of the lobes of the sebaceous glands.

PAINLESS DERMOID CYSTS.—These occur, either as single, few, or more often as exceedingly numerous, uncolored or yellowish-white pinhead- to small nut-sized lesions, strongly resembling multiple fibromata, but all containing a sebaceous or cheese-like matter when incised and the contents expressed. They are subcutaneous in situation, and like atheromata exhibit no opening. They occur chiefly about the nose and over the temples. Jamieson, Hebra, Rayer, Politzer,¹ and others have reported cases, the last-named observer finding a well-defined cyst-wall with cystic contents consisting of typical epithelium transformed into horny cells undergoing fatty degeneration. Pathologically they are recognized as embryonal cysts of tardy evolution. In different cases they are found to contain horny masses, bones, teeth, wisps of hair, cartilage, and a turbid fluid.

RARE CONSEQUENCES OF SEBACEOUS CYSTIC DISEASE are reported by Cook, Hutchinson, and others, in cases in which steatomata in typical situations resulted in ulcerations of malignant type; in still other cases fungous tumors of considerable size formed, requiring surgical attention.

¹ Jour. Cutan. and Gen.-Urin. Dis., Aug., 1891.

CLASS II. INFLAMMATIONS.

EXANTHEMATA.

(Gr. *ἐξάνθημα*, blossoming, flowering.)

FOR a detailed consideration of the phenomena of the exanthematous fevers the reader is referred to the standard treatises on the subject in the field of general medicine. Space is allotted here merely to a description of the cutaneous lesions by which they are severally characterized. These are unlike in each disease, yet all exhibit certain common characteristics. In all the eruptions are symmetrical, and in typical cases are general. In each the efflorescence is succeeded by a desquamative or exfoliating condition of the skin. In each there is, within relatively fixed limits, a distinct stadium of the pathological process within which it is completed, and beyond which, however persistent may be its remote sequelæ, there is no chronic manifestation of the disorder. Each, also, is produced solely by its specific contagium, derived exclusively from an animal body affected with the same disease, being never, so far as known, generated from any other source, nor merging by imperceptible degrees the one into another. Two of these may rarely concur, but under such circumstances the one is always more pronounced in its features, which either closely precede or follow those of another. No specific medication is known to be capable of arresting any one of them, each pursuing its course uninterruptedly to a favorable or a fatal termination, according to the intensity of the poison present in each case and to the more or less favorable or unfavorable conditions of the sufferer. Finally, it seems probable that at no distant date specific bacteria or micrococci will be demonstrated to be etiological factors in the production of each.

MORBILLI.

(MEASLES, RUBEOLA. *Ger.*, MASERN; *Fr.*, ROUGEOLE.)

This disease is preceded by a period of incubation lasting from eight to twenty-one (usually between twelve and fifteen) days, a period in which there may be no evidence of ill health, or merely a moderate degree of lassitude and inappetence. To this period succeeds a prodromic fever, the temperature rising to 103°–104° F., occasionally alternating with chills or a sensation of chilliness, dryness of the skin, pains in the head, thirst, occasionally sweating, rarely convulsions in

children, and almost invariably a serous catarrh of the mucous surfaces, with specially pronounced ocular, nasal, pharyngeal, and laryngeal phenomena. By the second or third day the temperature begins to decline, while the catarrhal symptoms increase, these being manifested in sneezing, a copious secretion from the eyes and nose, and engorgement of the exposed mucous surfaces, especially of the conjunctivæ, the nares, and the throat. Occasionally the tongue and the fauces exhibit a few closely set, isolated, minute reddish puncta (enanthem). In consequence of the implication of the larynx, the trachea, and ultimately the larger bronchi, there is a hoarse, frequently an incessant and teasing cough of a convulsive character, accompanied by expectoration of mucus and muco-pus in moderate quantity. This prodromic period lasts from three to five days, but in exceptional cases is prolonged to twice that length of time. Upon its conclusion the exanthem appears, usually on the fourth day, with aggravation of the fever, the temperature rising to 104° – 106° F., and remaining at that point until the eruption has reached its apogee, when it commonly declines *pari passu* with the severity of the skin-symptoms.

Koplik's¹ diagnostic early sign of measles is the development on the mucous membrane of the lips and cheeks of children, often as early as seventy-two hours before the appearance of a characteristic exanthem, of bluish-white spots or of brilliantly red patches with a bluish-white punctum centrally situated in each. The occurrence of this early sign of the disease has been corroborated by many observers.

The eruption of measles usually appears first upon the face (the forehead and temples), and thence extends in about thirty hours over the neck, the upper portion of the trunk, and the superior extremities. Between the fourth and the sixth day of the disease it usually attains its deepest shades of color and its maximum of development over the entire surface of the body, including the palms and the soles. This maximum attained, the eruption gradually fades; the tumid condition of the skin, most noticeable on the face, also subsides; the catarrhal symptoms and cough become less annoying; and the patient enters upon the period of desquamation.

The eruption is almost invariably symmetrical, and is characterized by the occurrence of a diffuse reddish, yellowish-red, mulberry-red, deep raspberry-red, or, in extreme cases, violaceous-tinted coloration of the skin, or of pea- to small finger-nail-sized fairly well-defined macules, either not elevated or very slightly raised above the general level of the integument; or by the occurrence of large pinhead-sized, discrete papules, much more rarely pin-point-sized vesicles, corresponding in color with the shades described above, and highly suggestive of the first efflorescence in variola. These lesions become pale under pressure, exhibiting then a yellowish tint, and are often set together closely, particularly over the upper segment of the body, in patches suggesting a crescentic outline. The term "suggesting" is here used purposely, as it is difficult, by selecting a single patch, to determine by the eye alone the existence of such a configuration; while an examination of the eruption as a whole may often very clearly convey this

¹ Arch. of Pædiat., December, 1896; N. Y. Med. Record, April 9, 1898.

impression to the sight. Usually, patches of sound skin can be recognized even when the eruption appears to be confluent, complete confluence never occurring so as to form a sheet or mask over the entire skin-surface. Individual lesions may so merge as to be well-nigh indistinguishable separately; yet, on the whole, the eruption deserves fully the plural character of its English name. It is made up in all cases of innumerable elements, whose identity is never wholly lost. The subjective sensation awakened is occasionally a severe itching or burning; frequently this is an insignificant matter compared with other disagreeable symptoms—the cough, coryza, and fever.

The exanthem spreads from the face to the upper extremities on the second day, and over the lower limbs on the third day of the rash. Its complex expression usually coincides with decided aggravation of the catarrhal symptoms.

Desquamation is accomplished usually with cessation of fever and the production of delicate yellowish-brown pigmentations of the surface where the elements of the eruption have existed, involution being first manifested in the site of the lesions which were earliest to develop. Gradually and simultaneously the catarrhal symptoms of the respiratory passages diminish in severity. This final stage of the disease is usually terminated in a fortnight from the date of invasion.

The complications and anomalies of measles depend upon the intensity of the poison, displayed in the most formidable symptoms where human beings are crowded together, as in camps and prisons; upon the degree of physical vigor; and also upon the various hygienic surroundings of the victims of the disease. Thus, the period of efflorescence may be unusually prolonged; the eruption may disappear suddenly, and as rapidly reappear; the cutaneous symptoms may alone be wanting; the latter may be commingled with petechiæ due to cutaneous extravasation of blood, which may also be accompanied by severe epistaxis; and the catarrhal condition of the mucous surfaces affected may terminate in croupal or in diphtheritic disease, may be followed by capillary bronchitis, catarrhal pneumonia, and even by pulmonary tuberculosis. Typhoid conditions may also supervene, and chronic inflammatory affections of the eyes and of the Schneiderian membrane result.

The **Pathology** of the cutaneous lesions in measles is that merely of acute hyperæmia occasionally passing into exudation, limited for the most part to the vascular papillæ of the corium and the perifollicular plexuses of blood-vessels. There is œdema of the fatty tissue surrounding the coil-glands, in the sheaths of the larger vessels, the cutaneous muscles, and the hair-follicles. The coils, follicles, and muscles seem to swim free in widely dilated spaces. There is no cellular exudation and no mitosis (Unna). Post mortem the eruption fades, as the result of gravitation of the blood from the anterior aspect of the body as it reclines upon the dorsum.

While it is possible that the etiology of measles will be based upon discovery of micro-organisms, no observer can claim to have conclusively established this fact. Bacteria of small size and remarkable motility have been found in the blood by Coze and Feltz; micro-

cocci in the trachea by Klebs; spherical bodies in the breath of children, and post mortem in the lungs and liver by Braidwood and Vacher; and similar organisms in the vesicles and pustules of malignant measles by Keating and Formad.¹

The disease is chiefly one of infancy, probably because at that age there is always the largest number of individuals unprotected by previous attacks. In every case the malady results from contagion, mediate or immediate, from an infected human subject. It spares neither age nor sex, though it is much rarer in advanced years than at other periods of life, probably because of the large number who at such period enjoy immunity.

The **Diagnosis** of importance is between scarlatina and variola. Typical cases with a well-developed eruption can scarcely be mistaken for either if the symptoms displayed are assigned their full weight. It would be useless, however, to deny the fact that there occur atypical forms which have again and again confused the most expert diagnosticians; in all cases of doubt the prudent practitioner will refuse to decide as to the nature of the disease until the symptoms have, in the lapse of time, fully been declared. The resemblance between ill-developed measles and certain of the eruptions seen in varioloid is in the highest degree striking, and the greatest skill, at a given moment of time, will in cases utterly fail to make a decision between the two. A distinctly crescentic character of the eruption, the presence of catarrhal symptoms, the continuance of fever after the efflorescence is completed, the color of the eruption, and the discovery of the nature of the disease from which the contagion was derived, will all point in the direction of the truth. From scarlatina measles is much more readily differentiated by the macular or papular elements of its eruption; by their color; by their appearance to a marked degree upon the face; and by the absence of the characteristic sore throat and usually intense febrile access of the first-named disease. From the various forms of erythema accompanied by fever, measles can always be distinguished by the irregular temperature-record as well as by the character of the eruption. The diagnosis between rubeola and r  thlen is given later.

The **Treatment** of measles should strictly be limited to careful hygienic attention to the invalid, including a restricted "fever diet," and the use of only such medicaments as are especially indicated. The antithermic remedies employed in the general management of the febrile process may be required in special cases.

In the way of local treatment the skin should be anointed with a bland, oily, or fatty substance, to relieve the pruritic sensations, especially after sponging of the surface once daily with a weak alkaline solution, which may be used cool without fear of producing "repercussion" of the exanthem. The chamber of the invalid should be

¹ Canon and Pielicke have recognized bacilli in fourteen instances in the blood, as also in secretions from the nose and conjunctiv  , and in lung-tissue after death from measles. These organisms were cultivated with marked success in bouillon. Czajowski cultivated a long, slender bacillus with blunt ends in nineteen cases; while Dohle describes flagellated protoplasmic bodies found by him in the blood, and supposed to be etiologically effective. Sternberg's Magnan's Bacteria. New York, 1884.

somewhat darkened for the sake of the eyes, but pure air should constantly be admitted.

The **Prognosis** is in general favorable, but is of the gravest in special conditions. All the complications named above increase the gravity of the disease, which is also enhanced among men crowded together in camps, children in public charities, pregnant women, the cachectic and those greatly enfeebled from disease, very young infants, old men and women, and residents of islands that have been long unvisited by epidemics of the malady.

The disease has been demonstrated to produce itself by contagion two to four days before the appearance of the rash, while the capability of transmission is usually lost between the twentieth and the thirtieth day after the exanthem is fully developed.

RÖTHELN.

(RUBEOLA, RUBEOLA NOTHA, RUBELLA, GERMAN MEASLES, HYBRID MEASLES, FRENCH MEASLES, EPIDEMIC ROSEOLA. *Fr.*, RUBÉOLE.)

Symptoms.—This disease has an incubative period lasting from fourteen to twenty-one days, followed either by the eruption or by short-lived prodromes lasting for a few hours to a single day. These symptoms are malaise, cephalalgia, articular pains, anorexia, and nausea. The occipital, cervical, and other glands may at this time become large and tender. After a pyrexia period, rarely lasting longer than a few hours and in many cases absent, the eruption appears, occurring for the most part in the regions affected by measles, in the form of multiple, pin-point- to small pinhead-sized macules, but smaller than the lesions displayed in that disease, and decidedly lighter in color. The shade is from a rosy or pinkish to a crimson red, rarely lurid, never of dark mulberry or violaceous hue. This color at times will be perceptible beyond the line of the lesions as a delicate halo, a circumstance which strongly distinguishes the exanthem from morbilli. The lesions, moreover, are seldom arranged in crescentic outline, being more often grouped in roundish or oval patches. Often, indeed, the elements of the eruption are discrete and disseminated. The fauces are occasionally reddened in puncta. The eruption commonly fades in from a few hours to one to two days, and there may be slight resulting cutaneous desquamation.

The rash of rötheln is to be distinguished from that of measles by the recognition of the features described above, particularly by the color, contour, and date of occurrence of the exanthem; the transitory character of the fever when the latter is present; the cervical adenopathy; and the rapidity with which involution of the disease progresses. By the temperature-record alone of the patient it may be differentiated from scarlatina, though the rashes are dissimilar in the two diseases. It is also not to be confounded with the erythematous affections of the skin. One of the most striking characteristics of the disease can be best recognized in a ward filled with children, all of whom are

simultaneously affected with the disorder. That characteristic is the remarkable mildness of the phenomena displayed in every case.

While the symptoms of r  theln are so defined as to justify a reasonable certainty in its diagnosis, it is now generally accepted that the malady exhibits no characteristics that may not be often assumed by measles. Further, by some observers the identity of the affection, as distinguished from all others, has been called in question.

Treatment.—R  theln should be treated by rest in bed, an abundant supply of fresh air, strict asepsis, and the usual diet of fever-patients. Medication by drugs is rarely indicated.

SCARLATINA.

(SCARLET FEVER, SCARLET RASH, CANKER RASH.
Ger., SCHARLACH; *Fr.*, SCARLATINE.)

The period of incubation of scarlet fever varies between twenty-four hours and six days, the average duration being about three days. The reason of this variation is to be sought, not in any changeability in the mode of evolution of the disease, but in the fact that its poison is less volatile and less rapidly dissipated than is that of measles, the result being that it may remain potential for longer periods in connection with articles through the medium of which it is transferred from one individual to another. This incubative period, like that described in connection with measles, may be unproductive of physical symptoms, or may be associated with ill-defined malaise.

Symptoms—The prodromes of the disease in typical cases are marked by the occurrence of a rapid and bounding pulse, an exceedingly dry skin, vomiting, headache, and a characteristic sore-throat. When examination of the mouth is made the tongue is seen to be thickly coated, and its filiform papill   reddened and prominent, features of the so-called “strawberry-tongue.” The velum, the pillars of the fauces, the tonsils, and all exposed mucous surfaces are engorged, tumid, reddened, and often covered with deep reddish puncta, which represent hyper  mia of the perifollicular tissues. Thirst is extreme, and deglutition is often in the highest degree painful. In severe cases the mucous surfaces named may speedily exhibit finger-nail- to pigeon-egg-sized ashy ulcerations with a lurid halo at the periphery. In children there may be syncope, delirium, convulsions, vomiting, or, when the poison has been intense, fatal results from shock of the nervous centres. This prodromal period usually lasts from twelve to twenty-four hours, though it may be prolonged for two days more. In this respect scarlatina is markedly distinguished from measles. This stage is terminated by the appearance of the exanthem, but the fever persists without abatement after the explosion; and the other symptoms of the disease are then in no wise ameliorated. Authors describe three distinct types of the disease: the simple, the septic, and the toxic.

The eruption in scarlatina usually spares the face, however much the latter may display two damask-colored cheeks under the febrile flush, may become tumid with the blood pumped through the throbbing

carotids, or even may exhibit a few scanty lesions upon the forehead and temples. About the mouth the integument is always pallid; this is far different from the picture presented in measles. The eruption is betrayed, first, in the form of light- or deep- red pinhead-sized puncta, closely agglomerated; and, second, in the form of a superadded erythema, giving to the eye the impression of a diffuse reddish blush. The rash develops early about the neck and the clavicular regions, and it rapidly spreads to the trunk and extremities, including the dorsal surfaces of the hands and feet, attaining complete development in the course of the second day. It is then of a distinctly scarlet color, whence the disease derives its name in Latin, English, and German, a coloration frequently compared with the appearance of a boiled lobster. Upon the limbs it is often developed in punctate form, while the occurrence of a diffuse scarlet blush is most distinctly perceived by the eye in the examination of the trunk, where the rash is seen to fade under pressure. In any event the erythematous blush commonly disappears before the individual elements of the rash are removed. The eruption can be made to disappear on pressure in the early stages of the affection. Drawing the finger-nail rapidly over the surface of the skin is followed by the formation of a whitish line, which persists for a time sufficient to enable one to describe a letter upon the skin. This period of efflorescence lasts for from one or two days to an entire week, during which the febrile and other symptoms continue unabated.

The rash usually persists at its maximum of development from one to three days, the concomitant symptoms continuing without noticeable abatement. Among the latter may be named the occurrence of albumin in a urinary secretion of diminished specific gravity, with occasionally the presence of epithelium, recognizable under the microscope as derived from the lining membrane of the uriniferous tubules of the kidney.

Having attained its apogee, the eruption in favorable cases begins to fade, the part first affected exhibiting earliest a lighter shade, while the other pathological phenomena diminish in severity, the sore-throat, especially in ulcerated conditions, alone persisting. In from four to ten days longer the eruption disappears, leaving a brownish-yellow pigmentation of the skin-surface; simultaneously the other symptoms of the disease vanish.

The desquamation which ensues as convalescence progresses is general, and is often proportioned in extent to the severity of the preceding eruption, though it may be generalized after a well-nigh imperceptible exanthem. Desquamation is more pronounced and characteristic in scarlatina than in any other of the eruptive fevers. It may be superficial and furfuraceous in character, or the epidermis may fall in lamellated layers; for example, the sheath of an entire finger, with the nail, or that of the entire palm. In this way sheets, ribbons, and shreds of the horny layer of the skin may fall from its surface and expose a new and often tender epidermis beneath. The hairs may simultaneously be shed. When this desquamation is finished the stadium of the disease may be regarded as concluded, the entire period

lasting in uncomplicated cases from a fortnight to a month or six weeks.

The **complications, anomalies, and remote sequels** of scarlatina are so numerous as to furnish a vast array of facts for the study of the pathologist. The reader need merely be reminded in these pages that the usual incubative and prodromic stages of the disease may be brief as to time, or be so brusquely followed by eruptive phenomena as to be indistinguishable. The latter may also first occur upon the extremities or trunk, and later on the neck and over the clavicles; or at once cover the totality of the surface by a rapid explosion, or be extremely short-lived, or be altogether absent, or be unusually prolonged and visible for even a fortnight upon the surface of the body, appearing and well-nigh disappearing without appreciable cause. To a proportionate extent the stage of desquamation may be reached precociously or tardily, and the exfoliating process tediously be prolonged and of intense type, jeopardizing in this manner the future of the convalescent prostrated by the fever which has passed or the sympathetic fever which may thus be awakened.

The anomalies of the scarlatinal rash are numerous, but they depend, in general, less upon a variation in the intensity of the poison than upon the physical condition of the patient. Thus, the affected surface may be elevated slightly above the general level; there may be no coincident pyrexia; the skin may exhibit irregularly disposed mottlings and maculations, the rash may be characterized by the occurrence of miliary papules, minute vesicles, or purpuric lesions, well defined against the general scarlet color of the skin by their violaceous shade and due to cutaneous extravasation of blood. The rare bullous, pustular, and urticarial lesions which may appear upon the skin are accidental and bear no relation to the specific history of the disease.

Catarrhal and parenchymatous nephritis is justly dreaded during the desquamative period of the malady, when it may prove fatal after a relatively benignant manifestation of the disease in its prodromal and eruptive stages. Gastro-intestinal disorders may also prove dangerous. An otitis externa, media, or interna may perforate the tympanum, destroy the ossicles, induce caries of the mastoid process of the temporal bone, and prove fatal by the eventual production of meningitis or phlebitis. To this grave list of disorders which may complicate scarlet fever must be added pneumonia, pericarditis, pleuritis, peritonitis, chronic purulent nasal catarrh (which may result in caries of the nasal bones), destruction of the cornea as a result of severe keratitis, persistent adenopathy of the subcutaneous glands, and malnutrition in many forms, which may so impair the vigor of the constitution as to leave the sufferer a physical wreck for the remainder of life.

SEPTIC (ANGINOSE) SCARLATINA is characterized by the gravity of the throat-symptoms. In such cases a parenchymatous inflammation of the tonsils, velum, and fauces supervenes at an early period, with enormous tumefaction; involvement of the submucous tissue and neighboring glands; and ulcerative, suppurative, and even gangrenous complications which speedily may prove fatal.

TOXIC SCARLATINA (SCARLATINIFORM TYPHUS).—Another severe type of this disease is that in which symptoms of typhus are pronounced. Here the patient may perish within a few hours after being attacked and before the eruption appears, exhibiting comatose or convulsive symptoms, indicating the profound influence upon the nervous centres of the intensely intoxicated blood; or the eruption may appear ill developed, often livid, hemorrhagic or petechial in type, and be followed by albuminuria, meningitis, diarrhoea, coma, and death.

FIG. 37.



Microphotograph of the edge of a small colony of *Bacillus scarlatinæ*: A, central zone; B, outer edge of growth.

Etiology.—The disease is produced exclusively by contagion derived from the animal body affected with scarlatina, either mediately or immediately. It attacks individuals of both sexes and all ages, children and infants more frequently, the aged more rarely, probably in consequence of their respective conditions as regards immunity conferred by a previous attack, since, in general, the disease occurs but once in a lifetime. Individual idiosyncrasy must account for the cases in which unprotected infants exposed to the disease fail to receive it, a fact noted occasionally in epidemics of all the exanthemata. The contagious element, which is volatile in its nature, seems to be most active during the eruptive stage of the disease.

Pathology.—Klein has recognized a streptococcus, isolated and occurring in chains, which has produced in the lower animals symptoms strongly suggestive of scarlatina, but irrefragable proof of the etiological importance of the germ has not been adduced. Class¹ describes a *Diplococcus scarlatinæ*, for which he claims to have obtained an anti-

¹ Phila. Med. Jour., March 24, 1900.

toxin proving capable of protecting guinea-pigs against the disease inoculated in animals which died in control-experiments in six or seven days. It cannot be asserted, however, that the essential micro-organism of scarlet fever has yet been clearly demonstrated. Scarlatina at times follows injuries and surgical operations, due, as Atkinson supposes,¹ to diminished powers of resistance to the disease.

The cutaneous lesions of scarlatina, like those of measles, depend upon hyperæmia and a moderate degree of exudation. The latter, when it occurs, is limited for the most part to the rete and papillary layer of the corium. The signs of the disorder are not apparent in the dead body unless there have been exudation of blood and the consequent formation of petechiæ.

According to Unna, the epidermis, when the disease is fully developed, is the seat of a parakeratosis productive of scaling, while the prickle-layer shows neither œdema nor emigration. In the cutis there is a maximum of congestion without distinct œdema. The general vasomotor disturbance leading to a species of vascular paralysis is supposed to be due to changes in the nervous centres produced by the disease.

The **Diagnosis** between measles, rōtheln, erysipelas, and the erythemata in general is readily established. The sore-throat, intense fever, punctiform scarlet rash reaching to the border of the inferior maxilla, and the distinct, whitish-yellow line traceable by the finger-nail when passed rapidly over the surface, are all characteristic. In measles the macular character of the rash and its crescentic arrangement, in connection with the catarrhal symptoms, will usually be recognized. From erysipelas scarlatina can always be distinguished by the absence of the peculiar, shining, smooth, or glazed and tumid condition of the affected area. From all other rashes scarlet fever can be distinguished by the pyrexia symptoms and resulting desquamation. For the distinction between scarlatina and erythema scarlatiniforme the paragraphs devoted to a description of the malady last named may be consulted.

Great care should be taken not to confound the drug-rashes having a scarlatiniform appearance with the specific disease under consideration. Thus, belladonna, in doses of 1 minim of the tincture every hour to the extent of four doses, has produced an abundant scarlatiniform eruption in children, a diagnostic point of importance in view of the fact that the drug named has been employed as a prophylactic against the disease. For eruptions of this sort due to quinine and other drugs the reader is referred to the pages devoted to *Dermatitis Medicamentosa*.

Treatment.—The modern treatment of uncomplicated scarlatina is antiseptic and expectant, after provision is made for an abundant supply of fresh air, disinfection, a proper regulation of food and drink, and the local use of baths, tepid or cool, for the purpose of reducing the body-temperature. After each of these baths the skin should be completely anointed with a fatty substance, such as cold-cream salve, scented almond- or olive-oil, or with vaselin. These inunctions are not only grateful to the patient, but they reduce the body-temperature to a

¹ Jour. Cutan. and Ven. Dis., October, 1886, vol. iv.

slight degree. All treatment other than that suggested above pertains to the field of general medicine, and should be limited to the special conditions presented in each case. Such treatment includes the management of disorders of the eye, ear, throat, kidneys, and other viscera, the involvement of which constitutes a complication of the disease.

The **Prognosis** of the malady should always be established with reserve. It is largely based upon the relative intensity of the symptoms, the vigor and age of the subject, and the presence or the absence of serious complications. Albuminuria is rarely absent, and is not *per se* alarming; but anasarca and other evidences of profound interference with the renal function are to be assigned due weight. In general, it may be said that a high range of temperature; early and ulcerative throat-lesions; the puerperal state; tardy development, rapid and untimely disappearance, or undue prolongation of the exanthem; and its admixture with petechiæ to such an extent as to indicate extensive hemorrhagic extravasation, are all formidable symptoms. Finally, it must not be forgotten that the mildest and simplest forms of the disease, after the fastigium is passed and convalescence is actually established, may terminate fatally by the supervention of uræmia, cerebral paralysis, or even meningitis, consequent upon secondary changes in the middle or internal ear.

VARIOLA.

(Lat. *varus*, a blotch.)

(SMALL-POX, THE POCKS. *Ger.*, BLATTERN, POCKEN; *Fr.*, PETITE VÉROLE; *Ital.*, NAJUOLO.)

The variations of variola as to the severity, character, and duration of its symptoms are so great as to preclude complete description of this malady within the limits here assigned. The following paragraphs are therefore devoted to a sketch merely of its more commonly recognized characters.

Symptoms.—The period of incubation of the unmitigated disease varies between five and twenty or more days, occupying usually twelve days or a fortnight. It is characterized by the peculiarities of that period recognized in all the exanthemata, there being few and insignificant or no evidences of physical discomfort. The prodromic stage is ushered in generally by a vespertine chill, succeeded by fever, with a temperature rising to 104°–106° F., which is commonly associated with severe and characteristic pain in the loins, headache, epigastric pain, nausea or vomiting, and occasionally in young subjects with delirium and convulsions. The fever continues, with alternations of exacerbations and partial relief, or sensations of chilliness, during the second and third days. At the same time there may be faucial hyperæmia and moderate dysphagia. Occasionally, before the cutaneous exanthem appears, minute reddish papules may be recognized upon the buccal membrane.

INITIAL RASHES (VARIOLOUS ERYTHEMA; VARIOLOUS ROSEOLA).—These may be either (*a*) erythematous in character, and gen-

eral or partial ; or (b) hemorrhagic, in the form of pure petechiæ or of admixtures of petechial and erythematous blotches.

On the second and third days there appears, in some cases, especially in menstruating women and in young subjects, a cutaneous efflorescence, the significance of which has often been misinterpreted, thus leading to many errors in diagnosis. To Hebra we are indebted for its distinct recognition as a cutaneous prodrome in variola. The interpretation of this exanthem is a matter of special importance to the diagnostician, as many have been deceived respecting its nature and significance. It is characterized by the occurrence of irregularly disposed and distinctly outlined maculations, puncta, striæ, streaks, or diffuse blush of bright or lurid reddish hue ; the invaded integument being at times slightly tumid, and thus elevated above the general level. The affected part may also be the seat of moderate pruritus. The blush may fade under pressure, but rarely does so perfectly. One cannot by the finger produce upon it a visible whitish spot. The rash occurs most often about the groins, the hypogastric region, the pubes, and the inner faces of the thighs ; and on examining these parts the physician will usually discover the evidence, in adult women, of recent or present menstruation, or of the puerperal state. It occurs also about the axillæ, the extensor faces of the larger and smaller joints, and the lumbar and clavicular regions. Often a broad area of the integument in these parts may exhibit a sheet or mask of dull crimson erythema, upon which may form pinhead- to bean-sized, dull-reddish papules, not losing their color under pressure, or more rarely petechiæ, vesicles, and wheals. All these are precursory phenomena, and are not transformed into characteristic variolous lesions. They fade almost completely before the latter appear. Rarely, a few scattered papules may be distinguished upon the face and the arms before the variolous erythema fades. Often the papules in full development are even less profusely displayed on the site of the precedent efflorescence. The latter need not be necessarily regarded as a symptom of portentous gravity. The entire surface of the belly may be covered with a uniform erythematous blush of dull-crimson hue, followed by confluent variola, and the patient ultimately recover. The physician, then, confronted with a deep-red erythema of the regions named, especially of the groins, the lower part of the belly, and the thighs of a menstruating woman affected with high fever, nausea, vomiting, and lumbar pain, should invariably suspect the presence of variola.

The vividly red or empurpled rashes of hemorrhagic type occur most frequently in the localities named above when the disease assumes a grave aspect, as in hemorrhagic variola.

THE SMALL-POX ERUPTION.—The period of the eruption in variola is characterized, at its earliest, by punctiform, subcutaneous discolorations which photography alone can reveal. Commonly the patient will be seen on the morning of the third or fourth day with the face and scalp covered with pinhead-sized and larger, firm conical papules, the touch of which to the finger suggests to most English observers the feeling of shot. Later, these papules develop upon the trunk and limbs ; and in well-marked cases every portion of the body-surface is

invaded, including the palms and soles. The lesions may be surrounded by a narrow rosy areola upon the trunk. They may be unproductive of subjective sensations or be slightly tender.

As a rule, there is complete defervescence when the exanthem appears, the patient experiencing such relief that if an adult has chanced not to view his face in a mirror nor to be informed of his appearance by those in attendance upon him, he will often regard himself as completely relieved of his three days' illness. In other cases the febrile symptoms persist with a lowered temperature.

FIG. 38.



Vertical section of pustule at the beginning of pustulation: *a*, umbilication at the site of an excretory canal; *b*, reticulum within the epidermis; *c*, reticulum of smaller meshes containing lymph- and pus-globules. (After RINDFLEISCH.)

During the first two days of the eruptive period the papules increase in number and become correspondingly agglomerated; while those of earliest appearance become transformed into vesicles containing a translucent serum, the roof-wall of many of them exhibiting an umbilication. This umbilication of the vesicle is characteristic, and slightly different from that observed in bullous and pustular lesions. The central depression is disproportionately large, and about it the yet undistended epidermis is often irregularly puckered or fluted. Even in this period the lapse of a few hours will produce a lactescent appearance in the formerly translucent contents.

From the sixth to the twelfth day the transformation of these lesions into pustules is effected, the process beginning, as in all the metamorphoses of the disease, in the vesicles of greatest age, those, namely, on the face and upper portions of the body. The lesions simultaneously enlarge until they are of the size of an average-sized pea, are surrounded with a distinctly ovoid areola, and, being fully distended, rupture the centrally placed filament which held down the roof-wall, consequently the umbilication of the pustules is lost. With this process of suppuration is awakened the so-called "secondary fever," a pathological process evidently not essential to the disease, as it does not occur in mitigated

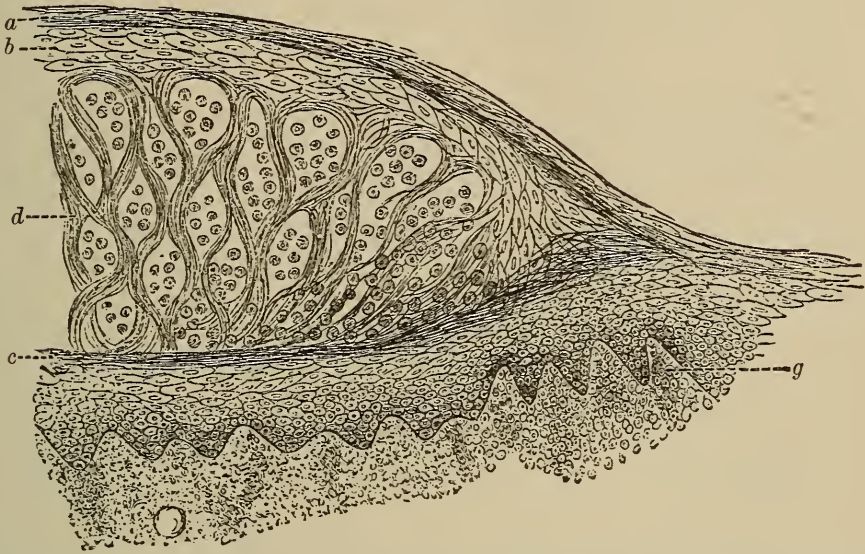
cases. This secondary fever is born of the extensive process of suppuration occurring in the skin and other organs, and may be symptomatic, sympathetic, or septicæmic in character. It thus varies in different cases with the character and severity of the process by which it is excited, being transitory in mild cases, and in others terminating only with death. At this time the patient is usually in a most distressing condition. The skin of the face and of other attacked regions is swollen, thickly covered with pustules, and the features indistinguishable in the tumid and closed lids, the œdematous lips, disfigured nostrils, and pus-obstructed mucous outlets. Deglutition becomes painful and often impossible, the saliva flows from the lips, and the mucus from the nares dries with the pus upon the exterior of the visage. The pustules recognized upon the integument are represented also in the gastrointestinal tract. In an autopsy of a patient dead at this stage of the disease the entire canal from the mouth to the anus, as also the genito-urinary and respiratory passages, may be completely covered with closely agglomerated and well-distended pustules. The career of those within the mouth can usually be studied by eye-observation. In this situation they rapidly lose their epithelial roof-wall by reason of the heat, moisture, and friction to which they are subjected, and then exhibit a reddened and excoriated surface, over which there is reformation of the epidermal layer. Gangrenous complications are rare.

Between the thirteenth and the fourteenth day desiccation begins, and is usually completed within from ten days to a fortnight; the pustules rupture, and the exuded pus concretes into yellowish or brownish, rarely blackish crusts, or the latter are formed by the desiccation of the entire envelope and contents. The pulse usually at the same time diminishes in frequency and secondary defervescence occurs, the tumefaction of the integument decreases, and at times the peculiarly characteristic and often intolerably fetid odor from the patient is less perceptibly exhaled. In from four to six weeks the course of the disease is completed. The immediate traces of the eruption are purplish and violaceous pigmentations, which slowly disappear. When cicatrices result they are slightly depressed, at first of a dull purplish hue, later dead-white, lustrous, usually symmetrical in disposition, and most distinct upon the surfaces exposed to the light and air, such as the face. Though persistent, they are rendered somewhat less deforming in the progress of years. When closely set together they produce a characteristic ridged and corded appearance, due to the elevation of narrow bands of unaffected integument between the depressed surfaces of scars. The several departures from the pronounced type of the disease described above present variations differing widely from the most benignant forms. Brief reference only can be made to these variations.

VARIOLOID, whether occurring after vaccination or not, is a modified type of variola. With it should be classed all those forms of the disorder occurring in the human subject, and described by authors under the titles "swine-pox," "horn-pox," etc. In these cases there may be a severe prodromic fever and a scantily developed exanthem; rapid involution of lesions; abortion of the latter in any of their several

stages from papule to crust; absence of secondary fever; transmission of the disease in a mild or mitigated form from one individual to another, so that an entire community, vaccinated and unvaccinated alike, may suffer from an epidemic disorder of this moderate grade

FIG. 39.



Vertical section of one-half of an undeveloped variola-pustule: *a*, old epidermis; *b*, epithelia of rete above the alveoli; *c*, new-formed epidermis; *d*, alveoli filled with pus-globules; *g*, flattened and infiltrated papillæ lying beneath the pustule. (After AUSPITZ and BASCH.)

without the occurrence among them of a single case of typical variola. It is scarcely necessary to add that a patient with varioloid, especially during an epidemic, may transmit to the unprotected a malignant form of the disease.

HEMORRHAGIC VARIOLA, fortunately rare and too often confounded in the past with "black measles," is much more formidable, viewed from every point. When cutaneous hemorrhages occur during the course of small-pox they do not necessarily indicate that the case is one of so-called "varioliform purpura," since these losses may be accidents of the pathological process. In this malignant form of the disease, against the ravages of which vaccination often presents but a feeble barrier, the prodromic stage is followed by a deep purplish redness of the surface which is characterized by pinhead- to split-pea-sized, firm, closely set papular lesions, suggesting the occurrence of measles in a peculiarly severe form. The febrile, nervous, and other symptoms of the disease are proportionately intense. Ecchymoses appear upon the conjunctival membrane. Gradually the color of the exanthem, that at first disappeared under pressure, refuses thus to yield and assumes a bluish-black shade. Ecchymotic patches may be intermingled with the papules, rapidly widening to palm-sized and larger areas. The mucous surfaces share in these colors, being also infiltrated with effused blood, and the muco-cutaneous orifices are crust-covered and exhale an extreme fetor. Blood may escape from the bowels, bladder, mouth, or vagina. Signs of grave systemic and visceral complications are

always present. Vesiculation, pustulation, and the typical transformations of variolous lesions are all wanting. In the few cases observed by us death speedily supervened, either from shock, coma, hemorrhagic infarction of the lungs, or rapid exhaustion. Intermediate forms between hemorrhagic and true variola are described, in which forms the pustules occurring in the variolous type of the disease merely fill with blood in consequence of accidents possessing a purely local significance.

CONFLUENT VARIOLA is another severe form, less malignant, however, than that just described. It is characterized by intensity of the prodromic fever, which often scarcely abates with the appearance of the exanthem. The latter is developed in deeply implanted, firm papules, closely set together, succeeded by vesicles and pustules, which, as they enlarge, fully occupy the entire surface of the integument, and accomplish a perfect coalescence. In well-marked cases there is scarcely a pinhead-sized area of the entire surface of the body that is not invaded. The tissues become enormously œdematous; the deformity of the face renders the features indistinguishable. Hemorrhagic pustules and even patches of a gangrenous pulp may be intermingled with sheets of suppurating surface. Phonation, respiration, and deglutition are proportionately impeded or are absolutely subverted by the tumefaction and suppuration of the mucous membranes of the respiratory and gastro-intestinal tracts. When the patient survives until the stage of desiccation is reached the body presents an aspect as revolting as that ever displayed by a living being. A thick brownish or blackish-brown mask envelops the swollen head, trunk, and limbs, and the odor exhaled from the body is intolerably repulsive. All the systemic phenomena are proportionately grave, and are accompanied by one or more of the complications of the malady—pneumonia, pleuropneumonia, albuminuria, diarrhœa, various motor and sensory paralyses, subcutaneous furuncles, and abscesses. The eyes may suffer from pustular and ulcerative changes in the conjunctiva, cornea, and deeper tissues, with resulting inflammation of every grade to panophthalmia and consequent loss of vision. Often the patients, with surprising powers of resistance, will survive until extensive sheets of crusts have fallen from the skin-surface, and then perish slowly in a typhoid condition with low remittent or continuous fever. Every such case does not, however, terminate fatally. Children may rally from the severest form of confluent variola, and afterward enjoy vigorous health, thus illustrating the wonderful recuperative energy of the natural forces under the most adverse circumstances.

Etiology.—Variola is always the result of mediate or immediate contagion. It is a disease both contagious and infectious, being transmissible by volatile emanations from the victims of the disease. It is also artificially inoculable. When transmitted by the latter process its period of incubation is somewhat shortened, and often its successive manifestations become less formidable. The history of inoculated human variola has, however, received but little attention during late

years, since the practice properly has been forbidden by law. The disease is, to a certain extent, transmissible from man to the lower animals, and the reverse. It attacks individuals of both sexes and all ages, including the fœtus *in utero*, which may be ushered at an untimely hour into the world, macerated or recently dead and covered with the lesions of variola. The disease in the larger cities is decidedly more frequent in winter than in summer, possibly because in the colder months the opportunities are greater for spread of the contagion in artificially heated dwellings in which numbers of individuals are crowded together. Islanders, long unvisited by an epidemic and unprotected by vaccination, may suffer equally in the summer season.

Pathology.—The parasitic nature of variola has not been demonstrated. Coze, Feltz, Baudouin, Luginbühl, Weigert, Hallier, and Cohn have recognized micro-organisms, both bacteria and micrococci, in the blood of variolous patients. None of these organisms has yet been utilized in the production of the disease; but Cohn¹ regards these parasites as instances of a “twin race” of the micrococcus *vaccinæ* discovered in vaccine-lymph. The secondary fever of the disease is without question septicemic, and is due to pus-cocci and their toxin.

According to Unna, the main distinction between the vesicle of variocella and that of variola lies in the slow growth of the one and the prompt suppuration which is added to the fibrinoid degeneration of the other. The epithelium of the lower prickle-layer undergoes speedily “ballooning colliquation” not only at the apices of the papillæ, but also in the depths of the ridges. A gradual division of the vesicle follows into an upper and a lower story, with a lateral extension of the cavity in the upper prickle-layer, a somewhat characteristic œdema, and mitotic proliferation of the semisolid cushion below. The umbilication is produced less by the action of centrally placed epithelia acting as guy-ropes than by the enormous force of the exudation at the periphery in contrast with the slight activity of the central parts, as a result of which the latter are simply “left behind.” Gradually there follows a dense collection of plasma-cells in the adventitial sheaths of the blood-vessels. The latter subsequently dilate, and the line of demarcation between the cutis and rete becomes well-nigh indistinguishable on account of the stream of leucocytes thither. Healing begins at a later stage by the formation and gradual contraction of a thin layer of epithelial cells lying close to the connective tissue and extending from all sides beneath the pustule.

Diagnosis.—The difficulty attending the diagnosis of variola in its prodromic and earliest eruptive stages, from measles, is considered in the description of the latter disease. The general demand, indeed, upon the physician for an exact and definite diagnosis of every case before its complete evolution, is founded upon an erroneous conception of possibilities, and the sooner this is generally recognized the better for all concerned. A delay of even a few hours will often verify or remove a suspicion. Fully as much mortification on the part of the physician and damage to the best interests of the patient may result from an error in one direction as in the other. The wisest course in

¹ See Magnan, loc. cit., p. 411.

every doubtful case is to admit the doubt and to visit the patient frequently for the purpose of observing the development of the disease until that doubt is removed. Typical cases of variola are recognized with ease from the character of the symptoms presented. Syphilis and acne are always distinguished by the absence of fever and their relative chronicity.

The **Prognosis** of variola is largely dependent upon the degree of protection conferred by previous vaccination. Independent of vaccination, the age and vigor of the patient, the presence or absence of an epidemic of severe or mild type, the extent of the eruption, and the character of the surroundings of the patient are elements of prime importance. Very young and aged subjects, women pregnant or in the puerperal state, and, as Hebra has shown, those who have suffered from a previous attack of the same disorder, are all unfavorably disposed with respect to the final result. Confluent and hemorrhagic forms of the disease are, naturally, the gravest. Unmitigated variola, under the most favorable circumstances, is one of the greatest scourges of humanity, and as such will probably always destroy a frightful proportion of its victims. At the same time the conscientious physician needs to be impressed with the fact that, under the most discouraging circumstances, the patient, disfigured to the greatest extent by an envelope of blackened crust, and in a state of extreme physical prostration, with many of his bodily functions almost completely suspended, may even from the midst of such peril be won back to life and vigor. The assiduous attentions of a skilful nurse, guided by the inspiring presence and councils of a physician who is himself fearless of the malady, will often achieve the result. Upon the latter point it is interesting to note that physicians in active practice who do not hesitate to expose themselves freely to the disease in the discharge of the duties of their profession rarely suffer in their own persons.

The **Treatment** of variola should, in general, be limited to the indications presented in each case. No remedies can be employed which have the least power to abort the disease. Kaposi calls attention to the striking fact in this connection, that syphilis, for many of the manifestations of which mercury is a specific, is a disease the second incubation-period of which is measured by weeks, and yet neither by excision of its initial sclerosis nor by mercurials can the subsequent manifestations of the disease be completely prevented. Certainly no specifics are recognized as of value in variola. The patient should be kept in a relatively dark room with an abundant supply of fresh air of a uniform temperature, and antiseptic solutions should constantly be at hand into which all the ejecta are received immediately. He should be given ice when this is acceptable to the palate, cool water *ad libitum*, and his strength should sedulously be supported by a liquid animal diet. The body may be sponged with or bathed in cool or tepid water as often as is grateful to the patient. In severe or confluent cases the immersion of the body in the continuous warm water-bath is followed by brilliant results in hastening the desiccation and fall of the crusts and subsequent repair. A bath of this character given for merely two or three hours in the day is often of great value. With

and without these external measures gargles of potassium chlorate, myrrh, honey, or carbolic acid will be found acceptable to the mouth and palate. The constant attention of an efficient nurse bestowing assiduous care upon the mouth, the skin, and the eyes may be regarded as an essential part of all sound treatment.

With a view to the prevention of pitting, no measures of a therapeutic character will prevent the occurrence of a distinct cicatrix whenever pus has eroded or otherwise destroyed the integrity of the papillary layer of the corium. Every effort, therefore, should be exerted to prevent extension of the suppurative process to the true skin. The following measures have approved themselves as of practical value: First, the sick-room should be moderately darkened and yet be amply provided with fresh air. Second, a solution of pure sodium hyposulphite should be administered night and day in the dose of from 15 to 20 grains (1.—1.3) every three or four hours. The variolous lesions pursue a milder course under this internal treatment, and in some cases even the vesicles shrivel before pustulation is fairly begun. Third, the skin of the face, after sponging with a weak formalin lotion, should be anointed with a bland fatty substance such as vaselin, almond-oil, or fresh lard, and over the unguent may be laid silk-enveloped compresses, dipped in tepid, weak solutions of carbolic or boric acid, or of thymol. The anointing of the surface before the application of the lotion is commonly more grateful to the patient, but the skin may constantly be moistened with the aqueous lotion alone. Here, again, the assiduous attention of the nurse is a matter of importance. The powder of euophen topically is often applied with advantage.

The edges of the eyelids should daily be anointed with freshly prepared cold-cream salve. Puncture of the cornea may be required for the relief of hypopyon. Diarrhœa and other symptoms of visceral derangement should be relieved by appropriate medication. As a rule, the administration of narcotics for the relief of pain is objectionable. Throughout the course of the disease the strength of the sufferer should be supported by a generous use of animal broths or of milk; in typhoid conditions a judicious employment of stimulants may be necessary.

VARICELLA.

(CHICKEN-POX. *Ger.*, SPITZBLATTEN, WASSERPOCKEN;
Fr., VARIOLETTE.)

Symptoms.—This disease has an incubative period lasting from ten days to a fortnight, after which there is occurrence of malaise, chilliness, and languor. The patients are usually children, who may suffer thus from fever of a moderate grade (99°–100° F.) lasting from a few hours to two or three days, after which defervescence is commonly complete. With the onset of the fever or even without, the rash appears, first on the head and trunk, in the form of rosy macules or slightly elevated lesions lacking the characteristic “shot-like” feeling of the variolous papule. These macules rapidly become vesicular, the lesions being pinhead- to pea-sized, limpid, superficial in situation, differently shaped from variolous lesions, and very rarely umbilicated, puckered, or

"fluted" as in small-pox. The macules appear in successive crops, and are often surrounded by a faint pinkish or reddish halo. Their contents become cloudy or lactescent rather than puriform, and they desiccate as early as the second day, forming thin, light, superficial crusts. The lesions may be abundant in one region, as, for example, over the back or the chest, but are never both abundant and generalized and never confluent. Like variolous lesions, they extend at times to the mucous surfaces of the eyes, the mouth, and the genital regions. Occasionally they are productive of pruritic sensations. Often the course of the disease is so mild and the exanthem so slight as scarcely to attract attention. Cicatrices result only in places, chiefly the face, where the lesions have been subjected to local irritation.

Diagnosis.—The doctrine that varicella is a mitigated form of variola has been practically abandoned in consequence of the researches of pathologists. It is of vast importance that the essential differences between the two diseases be exactly and generally recognized.

In variola the invasion-period of relatively fixed limits, the speedy transformation of the lesions into minute, firm papules, their early appearance on the exposed parts of the face and wrists, the age of the patient, the thermic variations, the prodromic rashes, and the rapid transformation of the papules into umbilicated vesicles, are all important diagnostic points. In varicella the trunk usually exhibits the greater number of lesions, which appear also in successive crops. Beside the characteristics of the cutaneous lesions the catarrhal symptoms of measles and the sore-throat of scarlatina will point to the nature of these disorders. Impetigo contagiosa is to be carefully distinguished from varicella, since the two affections occur at times side by side in one hospital ward, and occasionally the former succeeds the latter. The lesions of impetigo contagiosa are often larger, generally more persistent, and the crusts bulkier than in varicella, and the patients rarely exhibit pyrexia symptoms.

Pathology.—According to Unna, the varicellous process begins with a "reticulating liquefaction" of some of the prickle-cells of the central and upper portion of the rete in which the first congestive focus is seen. The complete liquefaction of the contents of the loculus is followed by confluence of adjacent cavities and rapid dilatation to the point of formation of a vesicle, the non-liquefied and persistent epithelium being compressed so as to form the septa, while the cells above produce similarly the roof-wall. The epithelial cells of the base undergo, on the other hand, "ballooning colliquation" (transformation of cells into hollow spheres or balloons having the form of peculiar giant-cells), a change affecting especially the centre of the pock, its lateral margins, and even at times its septa. Internally, these ballooned cells merge into simple œdematous epithelium with constricted nuclei. Careful observation of the lesions of varicella demonstrates that the vesicles are as distinctly divided into septa as are those of variola. These lesions are never monocular. Their benign course is explained pathologically by their superficial position, by the absence of purulent infection, and by early repair with young epithelium. The absence of umbilication is explained by the acuity of the process. Bareggi, Guttmann,

Pfeiffer, and others claim to have discovered micrococci and protozoa both in the blood-corpuscles and in serum obtained from subjects of the disease; but no pathogenic relation of these germs has been established.

Treatment.—The management of uncomplicated cases of varicella is limited to the avoidance of exposure to sources of aggravation of the affection. Often a dusting-powder may be applied over the surface after a lotion of thin oatmeal-water. Cases complicated by the accidents of exposure or by the intensity of the disease are to be treated by the resources of general medicine according to the indications presented.

VACCINIA.

(COW-POX. *Ger.*, KUHPOCKEN; *Fr.*, VACCINE.)

The limits of this volume forbid a discussion of the interesting questions concerning the relations of cow-pox as it occurs spontaneously in the milch cow, to human variola. A careful collation of the results obtained by a large number of vacciniculturists of recent days renders it clear that it is a matter of great difficulty to transmit variola from man to the heifer; that where this rare result is obtained the lymph derived from the lesions on the udder or the belly of the animal is liable to produce variola when retransmitted to man; and that spontaneous cow-pox alone seems to furnish a lymph which is safely inoculable in generations to the human race.

Of greater importance is it to note that, either by arm-to-arm vaccination as was formerly extensively practised, or by the use of the animal virus which is now well-nigh exclusively employed, there has been conferred upon millions of human beings a degree of protection against variola the value of which is beyond estimate. In both methods the lymph is originally derived from the female of the bovine race, preferably during the puerperal state, and its sources are the vesicular lesions of vaccinia spontaneously arising or artificially cultivated about the teats, udder, and adjacent parts. The introduction of this lymph into the skin of the human subject is termed "vaccination."

The operation of vaccination should eliminate to the largest extent the possibility of transmitting any other contagious disease than the one intended. With this object in view, no better instrument can be devised than a clean needle, one which has been properly disinfected and not previously employed for any purpose. The skin of the part selected for vaccination being first cleansed antiseptically and subjected to slight tension by the left hand, the vaccinator should scratch or scrape off the epidermis with the needle, held in the right hand, by a series of parallel and crossed strokes, so as to make three or four superficial erosions three inches or more apart. Each of these multiplex wounds should have the size of the nail of the little finger, and should in no case bleed, but merely ooze with serum slightly tinged with blood. At such points the lymph, preferably extruded by air-pressure from a slender glass-tube in which it has been hermetically sealed, is to be slowly and thoroughly rubbed in.

Between the third and the fourth day after a successful vaccination of the unprotected a light-reddish, pinhead-sized papule rises at each inoculated point. Between the fifth and the sixth day it becomes transformed into a translucent, well-distended, occasionally umbilicated vesicle, which, when single, may attain the size of a finger-nail. Springing from the multiplex abrasions described above, a minute papule usually forms at each point of intersection of the crossed lines produced by the scratching with the needle, and the subsequent vesicles coalesce, thus forming a compound lesion of rather peculiar aspect. It appears often as a small coin-sized plaque, elevated to the extent of a line or more beyond the general level of the skin-surface, with a rim formed of numerous discrete or confluent vesicles, which in either case are closely set together. The compound plaque seems to develop afterward as a single lesion, its centre being depressed. After the ninth day the fluid becomes opalescent, and desiccates in a reddish-brown crust, which, examined in section in a good light after it is completely dried, exhibits a smooth, homogeneous, shining appearance with a color having the shade of amber.

Fully as important as any of the metamorphoses of this lesion is its rosy-red areola, in the absence of which it has been held that there is not proper protection. The areola, which endures from about the fifth to the tenth day, completely encircles the compound vesicle in the form of a halo having a diameter of several inches, the tissue it invades being often slightly tumid. When the pathological process in the focus of this areola is intensified, either as the result of the irritant character of the virus or from extrinsic causes (undue exertion of the vaccinated part), the areola may spread down the arm or over the thigh or leg and eventually cover a dense, brawny, and deeply reddened integument. Dermatitis, erysipelas, lymphangitis, adenopathy, and severe grades of inflammation of the subcutaneous tissues may for similar reasons complicate the process, which may terminate by central sloughing, ulceration, slow repair, and the production of an atypical cicatrix. Ordinarily the subjective phenomena are limited to a mild or annoying itching of the vaccinated surface; in other cases severe burning pain, a feeling of tension, and even sympathetic fever may be aroused.

The acme of a successful vaccination is usually attained between the tenth and the fourteenth day, after which the symptoms of the disorder gradually subside, the crust falling, if undisturbed, in the course of the ensuing week. When "animal" virus is employed the duration of each of these stages of the disease is usually somewhat prolonged.

The cicatrix, at first slightly reddened or pigmented, gradually assumes the dead-white appearance of scars in general. When typical it is slightly depressed, circular, not irregular nor deformed by ridges, cords, or bands, and "foveolated," exhibiting a series of peripheral pits or depressions, each of which represents the site of a former minute vesicle of simple type. The degree of protection is based in part upon the multiplicity of typical cicatrices.

The complications of vaccination are due: first, to the character of the virus employed; second, to the character of the soil in which it is

implanted; and, third, to the external accidents to which the vaccine-lesion is subjected. Respecting the first of these sources, there are few contagious diseases beside syphilis which may be transmitted by vaccination. When this accident occurs it may be due either to syphilis in the vaccinifer or to the use of instruments soiled with infectious secretions. The lymph from a typical vaccine-vesicle upon the skin of an intensely syphilitic vaccinifer will necessarily transmit syphilis if accidentally it be commingled with either blood or the products of inflammation at the base of the pock. The stage and intensity of the disease in the vaccinifer are elements which cannot be ignored in forecasting the issue. The vaccine-lesion may complete its career during the incubative period of the initial sclerosis, the existence of which at the site of vaccination is commonly declared later by induration, ulceration, pigmentation, and axillary adenopathy. The occurrence of a generalized syphiloderm before the chancre of vaccination is completely healed may be the first symptom to arouse suspicion. The popular impression regarding the frequency of this accident is erroneous. The rarest of all modes of transmission of syphilis is that by vaccination. In all such cases the possibility that the syphilis may be hereditary and its symptoms simply coincident in point of time with those of vaccinia, should not be forgotten.

Exceedingly dangerous is that vaccine-virus, however good its early character, in which decomposition or putrefactive changes have occurred after exposure, in a liquid form, to the action of heat and the atmosphere. Vaccination with lymph thus changed has rapidly been followed by fatal results, in consequence of the supervention of pyæmia or septicæmia.

Complications of vaccinia, due to the character or predisposition of the tissues in which the virus is introduced by the vaccinator, are usually ascribed by the ignorant or the prejudiced to the causes just considered. *Post hoc ergo propter hoc* is the sole logic of the uninformed. In this way each of a series of maladies has been ascribed to "impurities" and "humors" introduced by vaccination. The arguments used in support of these assumptions are without basis in the most of cases. The cutaneous symptoms which may be awakened by vaccination are numerous. It will be remembered that the contents of the typical vaccine-vesicle are auto-inoculable, and that thus the scratching by young patients may produce an abundant crop of typical or torn vesicles upon the arms, legs, thighs, hands, and fingers. But vaccination may awaken in the patient, as explained above, a latent syphilis, as also a list of cutaneous disorders not contagious in character. Thus, an erythema (roseola vaccinia, vaccinola, etc.), eczema in many of its forms, and other exudative processes may be aroused first in the integument by the turbulence of a successful vaccination.

These rashes may become generalized, and may even assume a formidable appearance. They may appear at any time from the second to the fourteenth day after vaccination. A scarlatiniform rash, diffused or in patches, is described by some authors as occurring in this way, accompanied by mild fever, and resembling German measles.

Similarly generalized eruptions, resembling erythema multiforme, erythema scarlatiniforme, eczema, psoriasis, pemphigus, urticaria, impetigo contagiosa, varicella, and other cutaneous disorders, may appear for the first time within the limits named above. They usually disappear within a brief time after the vaccine-vesicle has completed its involution, and may be followed by slight desquamation or pigmentation. Very rarely vaccinia is followed by purpuric symptoms and by the development of lupus-nodules at the site of inoculation.

Anomalies of the vaccine-vesicle are occasionally noted as to shape, career, and resulting cicatrix, which are difficult to explain. Thus, the papulo-vesicle may not exhibit an umbilicated centre, or may complete its course within unusually short limits; or a harmless ulceration may progress beneath its crust, requiring a week, or even more, for complete cicatrization. The so-called "raspberry-sore" results from coalescence of small papules, so as to form a pigmented tubercle. The scars resulting from many of these irregular and non-protective results of vaccination usually form atypical cicatrices, being, in one case, small palm-sized, deforming, corded, and representative of large tissue-loss; and, in another case, irregular and inconspicuous.

Lastly, the complications of vaccinia due to external accidents of the lesion are usually inflammatory in character. The excessive use of the vaccinated arm in labor and of the vaccinated leg in walking, standing, and other exertion, may induce, as indicated above, every grade of dermatitis and even ulcerative changes in the site of the inoculation, as a result of the intensity of the process. For these accidents rest is essential, with the free use of a dusting-powder over the inflamed surface. In exaggerated cases lotions of lead-water and opium may be employed. These conditions are usually relieved without difficulty as soon as the part is put to rest. The atypical scar which results seems to be in such cases as protective as others, if only the accident have occurred to a typically progressing lesion with distinctly perfect areola. Vaccine-cicatrices are to be distinguished in anomalous situations from maculæ atrophicæ, the scars of syphilis, and other scar-leaving disorders.

GENERALIZED VACCINIA (vaccinal eruptive fever) usually results from a non-cutaneous introduction of vaccine virus; and is characterized by the production of vesicles of vaccinia in crops, which resemble strongly the lesions of variola. Supernumerary vesicles form, at times on the mucous surfaces of the mouth, with febrile symptoms and subsidence of the eruption in about three weeks.

Pathology.—In the vaccine vesicle, according to Unna, the epithelium undergoes ballooning as in variola and varicella, but in the first-named affection the two forms of degeneration, "reticulating colliquation" and "ballooning," are peculiarly commingled. The greater prominence of the ballooning may be due in part to the juvenile character of even the oldest cells. The existence of an inoculation-wound has a marked influence on the microscopical picture, the resulting fissure being filled with blood-disks inside the horny layer, which is

somewhat thickened. In vaccinia, as in the two maladies which pathologically it most resembles in its lesions, the formation of the vesicle is by chambers, the septa consisting of collections of cells (granular and others) which seem to be the remains of the sweat-pores.

Micrococci have been recognized by Cohn in vaccine-lymph. These have been named "micrococci vaccinae," but their relation to similar organisms discovered in the blood and tissues of variolous patients has not been determined. Wolff¹ claims to have cultivated these organisms through fifteen generations. Strauss demonstrated their existence in the vaccinal pustules of the calf.²

Lipp, of Gratz, reported to the International Medical Congress, in London, that he had recognized great similarity, if not identity, between the micrococci of vaccinia and those of variola that he had cultivated to the second generation, but had then been unsuccessful in producing inoculation-effects. These organisms were always arranged in groups of four or multiples of four.

Steinhaus³ reports that Unna's ballooning and reticular degenerations play no part in the formation of the pock in animals. The process is, instead, Ziegler's dropsical degeneration with typical mitoses, but without division of the cell-nucleus.

Treatment.—The management of the severer types of vaccinia and of the complications of the disease is to be conducted in accordance with the principles of treatment described in connection with dermatitis venenata and acute eczema.

ERYTHEMA.

(Gr. *ἐρύθημα*, redness.)

(ROSE RASH. *Fr.*, ERYTHÈME; *Ger.*, HAUTRÖTHE.)

Erythema is, strictly speaking, a mere redness of the skin due to congestion of the cutaneous vessels. Much confusion has arisen from the fact that the term is used to indicate a mere symptom, and is also applied to two fairly well-defined groups of cutaneous diseases. Redness of the skin, varying greatly in its intensity, duration, and distribution, is seen in many different conditions and diseases of the integument and of the general economy. In the so-called "idiopathic erythemas" the redness may be the sole symptom recognizable, but it is usually produced by some definite internal or external form of irritation, or is symptomatic of systemic disease. Erythema may simply be hyperæmic and be due to a congestion, active or passive, of the cutaneous blood-vessels, or the process may go on to exudation and inflammation. From a pathological point of view it is evident that no sharp line can be drawn between erythema hyperæmicum and erythema exudativum, yet for clinical purposes it is convenient to make this distinction.

¹ Berlin. klin. Woch., January 22, 1883.

² See Magnan, loc. cit.

³ Gaz. Lekarsk., 1898, xviii., p. 274.

ERYTHEMA HYPERÆMICUM (*seu* **SIMPLEX**).

Erythema simplex is a coloration of the skin in various shades of redness, temporarily disappearing under pressure, the lesions differing in size and shape according to the extent and degree of the hyperæmia by which they are induced.

Simple erythema is seen in the phenomenon known as blushing. Ordinarily this is a purely physiological and transitory hyperæmia due to emotional causes. Cases occur in which the hyperæmia thus induced persists for hours, together with palpitation and other evidences of circulatory disturbance. Here the erythema is symptomatic of either physical or mental disorder. With the former may be classed those disorders in which portions of the face remain flushed after eating, exercising, exposure to heat, etc.

Under idiopathic erythema, have been classed simple forms of erythema for which no cause is recognized. In the great majority of cases a careful search will disclose the disease or condition of which the erythema is but a symptom. The cause may be found in external irritation too slight and too transient to produce a dermatitis, in disturbances of the alimentary canal, in the nervous irritability of children due to "teething," in a drug-idiosyncrasy, or in one of many other derangements of the general economy. Again, the erythema may be a more or less important diagnostic symptom of graver constitutional disease, as in the exanthemata, typhoid fever, etc. The color in erythema may vary from a delicate pink or rosy shade to a dark-reddish hue; it may be transitory or persistent, and may be limited to circumscribed points, or macules, or be displayed in diffuse, ill-defined areas. The character, duration, and distribution of these rashes when due to simple causes often depend largely upon the peculiarity of the individual. The same source of disturbance or irritation may produce different effects on the skins of different persons.

Erythema traumaticum is the result of friction, rubbing, pressure, scratching, or similar external contacts. It is observed, for example, in the part pressed by the pad of a truss; in the colored circle left about the leg where a tight garter has been worn; and the sides of the nose where pressure is exerted by a newly applied pair of eye-glasses. These traumatic hyperæmias are readily converted into exudative affections if the traumatism be long continued. Intermittent pressure upon the skin permits restoration of the vascular equilibrium, and the integument responds to the demand made upon it by increasing in thickness; continuous pressure, on the contrary, admits of no such restoration, and the tissue finally becomes thinner, and yields before the agent inflicting the injury. Inflammation resulting in ulceration may finally supervene.

Erythema Caloricum (**Erythema ab Igne**).—Extremes of heat and cold, either natural or artificial, are sufficient to induce transitory redness of the skin-surface. In the erythema induced especially by solar heat there is frequently an increase in the pigmentation of the surface, as in the production of freckles and "tan" in persons whose skins are

reddened by the sun. The darker, brownish, and chocolate-colored stains of the hands and face are thus induced.

Erythema ab igne occurs in annular and odd-looking gyrate patches on the anterior surfaces of the legs in cooks, firemen and stokers, and in persons exposing that portion of the body to the direct action of heat. The annular patches may be several centimetres in diameter, and vary in shade from a light to a deep red or even a purplish tint, intense, often permanent pigmentation resulting as the erythema subsides. Perry¹ believes that the phenomena are due chiefly to a blood-disintegration occurring in and around the walls of the plexus of superficial veins. He adds that the name *ephelis ab igne* better describes the condition.

Erythema Venenatum.—A number of chemical substances, dyes, and vegetable poisons are capable of producing transient hyperæmia of the skin. Among these may be mentioned cantharides, capsicum, mustard, anilin, chloroform, ether, arnica, and several of the essential oils.

Erythema Gangrænosum.—Under this title several singular affections of the skin have been described, in which erythematous patches appeared and were followed by greater or less extensive destruction of one or more of the several layers of the skin. T. C. Fox, in a description of the appearances in two cases of the affection under his observation, concludes that these patches are the symptoms of a feigned disease, or of one produced artificially for the purpose of exciting sympathy, etc. The majority of these cases are more properly described with *dermatitis gangrænosa*.

Erythema Læve is an obsolete term once employed to designate the shining redness of the skin in œdema of the lower extremities following any disorder sufficient to induce local tumefaction.

Erythema Paratrimma is a term once employed for the form of deep and lurid redness preceding the formation of a bedsore, an accident which under modern methods of nursing is as obsolete as the name once given it.

Erythema Fugax is a term applied to a transitory redness of the skin, usually occurring in small areas, which appears and disappears very much as do the lesions of urticaria; in fact, it may well be considered a mild form of urticaria in which typical wheals are absent.

The **Diagnosis** of simple erythema is not difficult, since without exudation there is an absence of all other elementary or secondary lesions of the skin. The difficult point in diagnosis is to establish the cause.

The **Treatment** of most of the erythemas depends entirely on the underlying cause. For the condition of the skin little if any treatment is necessary. A dusting-powder is often of service, and if there be itching or burning an antipruritic or soothing lotion may be indicated. Ointments are rarely required.

¹ Brit. Jour. of Derm., 1900, p. 94.

SYMPTOMATIC ERYTHEMA.

This may be of either active or passive form. A long list of physiological and pathological causes operating upon the system at large are capable of inducing active symptomatic hyperæmia of the skin. The large majority of these erythemas are toxic in origin. The redness may be generally diffused, or occur in surface-mottlings and markings of various sizes and shapes. Thus, the skin of the face may be reddened intensely in a paroxysm of rage; and that of the limbs of a teething child be covered with rosy maculations in consequence of the reflection to the surface, through the medium of the nervous system, of the irritation induced by the eruption of a tooth. In consequence of the rosy tint assumed by several of these rashes they have long been termed "roseola," a name which to-day is held to describe a symptom rather than a disease. The word roseola is still associated in the minds of many with the earliest syphiloderm, but that eruption is now designated by the best authors as the erythematous, or macular, syphilide.

Roseola infantilis is sometimes described as a distinct affection in which there are fever and constitutional disturbance lasting a few hours or even a few days. The exanthem varies greatly in extent and distribution. It is usually macular or punctate, but may be finely papular; it is most common on the trunk, but may appear on other parts of the body; it may closely simulate scarlatina or measles. It is probable that these phenomena are always the manifestations of some systemic or local disorder, and not, as the name would indicate, due to a definite disease.

Several of the severer constitutional maladies betray their morbid influence upon the central nervous system by a prompt efflorescence of this character. A lurid erythema of the axillary or the inguinal region may precede by several days the eruption of confluent variola. Cholera, cerebrospinal meningitis, diphtheria, enteric and other fevers are thus at times accompanied, preceded, or followed by rashes. A study of these rashes is of the utmost importance to the diagnostician. Children who are really susceptible to the disease are often supposed to possess an immunity from scarlatina, as the symptomatic erythema previously displayed was misconstrued. Vaccination may be followed in from one to eight or nine days by a macular or more diffuse erythema of the trunk and extremities, usually accompanied by some febrile reaction.

Symptomatic passive erythema is usually characterized by a cyanotic, purplish or darker hue of the integument, resulting largely from accumulation in excess of carbon dioxide in the blood. The temperature of such skins is either normal or below the normal standard, as in those cases in which gangrene ensues. A long list of conditions may be named in which these symptoms are noted, including derangement of the blood-vessels from imperfect innervation, direct pressure, or disease of the heart or vascular walls.

These erythemas may be either circumscribed in area or generalized. The term "livedo" is applied to circumscribed regions of passive erythema. Sometimes the nose, cheeks, fingers, or toes exhibit this

form of disease. The so-called "symmetrical gangrene" of the fingers belongs to the same category. Cardiac cyanosis, or Morbus Cœruleus, is a name given to a generalized dark-blue discoloration of the entire surface, due to continued patency of the foramen ovale.

Erythema Scarlatiniforme

(SCARLATINOID ERYTHEMA, DESQUAMATIVE SCARLATINIFORM ERYTHEMA, SCARLATINOÏDE, ERYTHEMA PUNCTATUM, ROSEOLA SCARLATINIFORME, "SCARLET RASH," ERYTHÈME INFECTUEUX, DERMATITIS SCARLATINIFORMIS RECIDIVANS).—Erythema scarlatiniforme is a name given to an eruption arising from a large number of causes and varying considerably in character, but having a tendency to simulate the rash of scarlatina. This condition has been described as an idiopathic disease, but it has so often been demonstrated to be a symptom only of other disorders that its existence as an independent affection may well be doubted.

Besnier, Brocq, and other French authors describe an *erythème scarlatinoïde*, which is acute in type, and which is always secondary to other infectious diseases, to auto-toxæmia, or to medicinal or food-toxæmia; and an *erythème scarlatiniforme desquamatif*, which is subacute in type, and which may be idiopathic, secondary to other infectious diseases, or be produced artificially by drugs. While it is often clinically convenient to make a distinction between acute and subacute forms of scarlatiniform erythema, there are no good pathological or etiological grounds for making such distinctions, since a given drug or given form of intoxication may produce the acute type in one individual and the chronic form in another.

Symptoms.—In the acute type, which is the more common of the two forms, the rash may be preceded by a day or two of fever and other evidences of constitutional disturbance, or it may appear suddenly without premonitory symptoms. The exanthem spreads rapidly and in a few hours, or at most in two or three days, reaches its full development. The rash may be punctiform, macular, or diffuse, and the color may be any of the shades of red, but it is usually a bright scarlet. In some instances it has all the appearances of a typical scarlatinal rash, except that it may begin on any part of the body, often sparing the face, and that desquamation begins much earlier (three or four days after the onset of the malady) than in scarlatina. There are usually some fever, malaise, and other constitutional disturbances that may vary greatly in intensity, depending upon the disease of which the exanthem is a symptom. The mucous membrane of the mouth, the tongue, and the fauces may be reddened or be denuded of epithelium, but the characteristic strawberry-tongue of scarlatina is wanting. The nails and the hair may be shed, but only in exceptional cases.

Desquamation usually begins in from two to six days, sometimes before the disappearance of the rash, and it may even occur on surfaces which had not perceptibly been reddened. The scales are usually furfuraceous, but they may be large and abundant; in rare instances the entire epidermis of the hand may be shed in glove-like form.

The subacute forms of scarlatiniform erythema differ from those described above in that constitutional disturbances are less, the rash has a greater tendency to be diffuse, and, together with the desquamation, may persist for weeks or for months, recurrences being frequent. Occasionally cases are found in which recurrences are so frequent as to make the condition practically continuous and clinically indistinguishable from the milder forms of dermatitis exfoliativa.

Etiology.—Idiosyncrasy is a most important factor in the etiology of those forms of erythema which appear in certain predisposed individuals as a result of causes totally insufficient to produce the same phenomena in most persons. The exciting factor is usually, if not always, some form of toxæmia. Among many causes reported are: infectious diseases, septicæmic conditions, toxæmias of varied origins, peritonitis, rheumatism, ague in children, gonorrhœa, abscess, empyema, uræmia, tuberculin-injections, sewer-gas poisoning (Crocker), certain articles of food, and many drugs. The causes are sometimes external, as when following mercurial inunctions, exposure to high temperature, etc.

Diagnosis.—It is most important to distinguish this rash from that of scarlet fever. Commonly the diagnosis is not difficult, as in erythema scarlatiniforme the constitutional symptoms are slight; the rash appears rapidly, beginning on any part of the body; the lesions are exclusively cutaneous; desquamation begins early and is extensive; the fauces though red are not swollen; and there is absence of the strawberry-tongue and of all history of contagion. Occasionally the rash may closely resemble that of measles or rōtheln, but the history of the case and the absence of other symptoms peculiar to these affections should make the diagnosis clear. As a rule, an examination of the rash alone is insufficient, and a diagnosis of erythema scarlatiniforme should not be made until the other exanthemata have been considered and excluded.

Treatment.—This depends entirely on the underlying cause or condition. Toxins present should be eliminated as rapidly as possible. The rash itself rarely calls for treatment. If there be itching or burning sensations, a simple dusting-powder, with or without an anti-pruritic or a soothing lotion, may be used to make the patient more comfortable.

ERYTHEMA PERNIO (PERNIO, "CHILBLAINS")

Is a form of erythema occurring in persons having a feeble circulation or strumous diathesis, usually in the young and the very old. The redness is most conspicuous, as a rule, on the hands and feet, merely because of the distance of these organs from the centres of circulation. The redness is of either a light or a dusky shade; is accompanied by tenderness, itching, and burning sensations, especially when the part is brought near an artificial source of heat; and may be the origin of exudative and other affections of the skin, though the ulceration and sloughing which occur in extreme cases are really the results of freezing the organs rather than of simple exposure to cold when the circulation is impaired.

The **Diagnosis** is readily made when it is observed that the redness disappears on pressure, and also that the parts are actually cool rather than hot, the coolness being appreciable by the touch. Not rarely they are both cool and moistened with sweat. Pernio may closely resemble an early stage of lupus erythematosus, but the latter does not vary regularly with the seasons as does pernio, which usually disappears in summer and reappears in winter. The two conditions are at times related, as individuals are seen with pernio of the hands or the feet, and lupus erythematosus of the face. Cases are recorded in which the site of a recurring pernio has become the seat of a typical lupus erythematosus.

The **Treatment** of pernio should be directed to improvement of the circulation and the general health. Warm clothing to protect the affected parts together with active exercise may do much to prevent recurrence of the disease. Fowler's solution is considered a prophylactic if given in small doses at the beginning of cold weather. The local treatment is by brisk friction and stimulating lotions, such as camphorated soap-liniment; acetous, spirituous, and vinous lotions; or the use of the ordinary "bay rum" of the shops. Afterward the parts should be well dusted with boric acid, and bandaged or wrapped in cotton. The severer forms of the disease are considered under *Dermatitis Calorica*.

ERYTHEMA INTERTRIGO

Is a hyperæmic condition of those cutaneous and muco-cutaneous surfaces which are in constant apposition, and between which there is a hypersecretion or retention of sweat.

Symptoms.—The erythema is limited to portions of the integument which lie in contact with each other, and is subject to certain modifications. The sites of such contact in the human body are the axillæ, the groins, the cleft between the nates, the intermammary and inframammary spaces in women, the superior and inner faces of the thighs, the scroto-femoral and the labio-femoral clefts in the sexes respectively, the flexures of the joints, and in especially obese individuals all those parts where the integument is thrown into fleshy folds, as about the necks of infants, and even over the crest of the ilia in fat women. In these localities the disorder, beginning as an erythema traumaticum, proceeds by its irritative effects to stimulate the secretion of sweat, which is freely poured out between the adjacent folds of the skin, and may there temporarily be imprisoned. The surface, heated and reddened, is also somewhat macerated by the effused perspiration, and the latter, when chemically altered, as it is frequently under these circumstances, adds still further to the original disorder. The ground is thus well prepared for an exudative process, which not infrequently supervenes in the form of a dermatitis or an eczema marginatum; but the disorder may be limited to mere hyperæmia with hyperidrosis, and disappear before the supervention of actual inflammation.

The sensations produced are those of heat and tenderness. When the parts in contact are separated the surfaces are seen to be reddened and chafed. Here and there very superficial abrasions of the macerated

epidermis become evident. One such abrasion is always especially significant. It is the linear and superficial excoriation which marks the line of deepest contact of the two apposed surfaces of the skin at the bottom of the angle formed by the two. An offensive odor usually proceeds from the part in consequence of the secreted fluid. The secretions of an intertrigo stain, but do not stiffen, the linen of the patient, and they thus differ from the serous fluid poured out in an exudative dermatitis.

Etiology.—The disease is chiefly induced by heat, friction, and moisture—these causes occasionally coöperating. The heat may merely be that of the natural temperature of the body, or it may be increased by that due to season and climate. The friction also may merely be that originating between the surfaces in apposition, or it may be increased by clothing or other articles worn next the skin. The moisture which produces maceration of the epidermis is that originating in the perspiratory follicles, their secretion being doubtless stimulated by the heat and friction. The interchange of operation of these three factors, lastly, is shown by the fact that friction, if severe, is capable of increasing the temperature of the part to which it is applied.

As aggravating causes may be named other physiological secretions and excretions retained in contact with the surfaces affected with an intertrigo. Thus, the feces of the infant left in contact with its nates upon the napkin; the urine of the old man with paralysis of the bladder or with “overflow” from prostatic disease; the milk of nursing women dribbling over the breast to the inframammary region; retained lochial, menstrual, and similar discharges, are all efficient in this regard, and are particularly liable to induce that form of dermatitis to which the intertrigo then plays a subordinate part. Fleishy and gouty persons chiefly suffer from these accidents.

Diagnosis.—The recognition of a simple erythema intertrigo is a matter of no difficulty if regard be had to the exciting and aggravating causes enumerated above, and to the special localities in which such hyperæmia generally originates. If an eczema or a dermatitis supervene, the fact will appear from increased subjective sensation (usually severe itching), from an infiltration of the affected integument, and from the appearance of those lesions and discharges which are significant of these forms of inflammation of the skin. It must be remembered that transition from a simple erythema to a dermatitis of these regions is of frequent occurrence. Erythema intertrigo may occur as a mild form of eczema seborrhœicum.

The special sites of preference of intertrigo are those of the disease named by Hebra “eczema marginatum,” or ringworm as it occurs upon the parts of the thighs covered by the “reinforcing” patch in the trousers of cavalymen. The disease is properly named “tinea circinata cruris,” though it is found also about the axillæ, the buttocks, and the groins of both sexes. Here the disorder, however, is of the exudative type, and, moreover, is distinguished by a characteristic “festooning” of the elevated border marking the advancing limit of the disease. The microscope, by revealing the existence of a fungus, will, of course, put an end to any doubt. In intertrigo the most

marked evidence of disease is to be recognized in the deeper parts of the cleft between the two adjacent skin-surfaces, while in *tinea circinata cruris* the growth of the parasite is most active at the advancing border of the patch, which is, moreover, perceptibly elevated above the sound skin.

Treatment.—Intertrigo is an exceedingly common affection of the skin, and it occasionally proves of great annoyance to those suffering from it. The skill of the young practitioner is often tested early in his professional career by his management of such cases; and not a little may depend upon the success with which he is rewarded. Gouty patients always require limitation of the diet, and often also medication with alkalies and mercurial cathartics.

The affected surfaces should gently be cleansed by ablution with soap and warm water, and the offensive odor of the secretions remedied by the addition to the water of a weak solution of formalin, of carbolic acid, or of the dilute liquor sodæ chlorinatæ. The parts are then to be carefully dried with a freshly laundered towel or a soft handkerchief, and afterward one of the dusting-powders very thoroughly applied. To be of service, these powders must be impalpable, and, if compounded by a druggist, be sifted through fine silk bolting-cloth. The articles chiefly used for this purpose are zinc stearate with acetanilid, bismuth, starch, zinc oxide, French chalk, lycopodium, or, when an antipruritic effect is desired, camphor. Combinations of several of these are at times effective. The formula of McCall Anderson is highly esteemed:

R	Zinci oxid. pulv.,	℥ss;	16	
	Camphoræ pulv.,	℥jss;	6	
	Amyli pulv.,	℥j;	32	M.
Sig.	Anderson's dusting-powder.			

For the purpose of absorbing excessive perspiration magnesium carbonate is the most effective of all the powders.

The following is the formula for a dusting-powder recommended by Klamann:¹

R	Talc. venet. pulv.,	℥v;	20	
	Acid. salicyl.,	gr. iij;	18	
	Magnes. ust. subtil. pulv.,	℥jss;	6	M.
Sig.	Dusting-powder.			

Finely bolted starch answers well alone or in combination with some of the other articles above named.²

The affected surfaces of the skin must also be separated in order to prevent further friction. A thin strip of lint, antiseptic cotton, or medicated wool may be used for this purpose, and must be inserted as far as the deeper portions of the cleft in which the secretion chiefly forms. Occasionally it will be found useful to anoint this absorbent layer with cold-cream salve or with vaselin. Where an astringent effect is desired lycopodium or other dusting-powder may be compounded with

¹ Hebam. Kalend., Obstet. Gazette, March, 1882.

² Unna's salve-muslins and pastes will be found effectual and neat applications in many forms of intertrigo.

tannin, alum, or similar substances. The list of lotions also may at times be consulted with advantage. Thus, cologne-water, weak spirit lotions, tannin, or aromatic wine, or magnesium carbonate, may each be serviceable. Lastly, carron oil (equal parts of lime-water and linseed-oil), spread thickly upon linen, will possibly give more relief than other articles named, the chief objection to it being the consequent soiling of the patient's clothing.

ERYTHEMA MULTIFORME.

(ERYTHEMA EXSUDATIVUM MULTIFORME. *Fr.*, ERYTHÈME PAPULO-TUBERCULEUX.)

Symptoms.—In this affection the most common lesions are erythematous maculæ, flattened papulæ, and even large flat nodosities. Vesicles and bullæ occur in a few cases. While multiformity is the rule, one type of lesion usually predominates in each case. The eruption is nearly always symmetrical, and occurs usually upon portions of the extremities, the forearms, the legs, and the dorsum of the hands and feet. It occurs exceptionally on other parts of the body, and rarely upon the mucous membrane of the mouth, nose, and conjunctiva. It has been seen on the sclerotic. From the beginning the lesions are more or less flat, elevated, and œdematous. The eruption, which is generally recognized in well-defined patches, usually begins with pinhead- to finger-nail-sized macules of a darkish-, bluish-, or purplish-red shade that lose their color under the pressure of the finger, and in the course of some hours exhibit tumefaction in various degrees, thus producing the papules, tubercles, and nodes already described. In many cases there is a remarkable tendency to a flattening and widening of the lesions to a point, when they closely resemble a floridly tinted condyloma. The disease may persist for but a few days, but in severer grades it lasts for several weeks or months. Recurrent attacks through a period of years are not uncommon. In the height of the exudative process there is usually an efflux of the coloring-matter of the blood into the skin which is the site of the several lesions, and thus are produced the singular shades of reddish black, purple and red, blue and red, yellow and orange, black and blue, that are characteristic of simple bruises of the extremities when the injury has been sufficient to cause extravasation of blood. The lesions occur in various shapes, sizes, and shades, a number of names having been used to designate their several appearances, that require explanation though they are without practical value.

The exanthem is peculiar in that it is especially likely to develop and recur in the spring and autumn, is not capable of being awakened to activity by external irritation solely, and is productive of rather insignificant subjective sensations (burning and smarting) as compared with other rashes of even less brilliant hue.

Erythema Annulare (or **Circinatum**) is characterized by a central depression and paling of color, and a peripheral extension of the erythematous patch in the form of a ring.

PLATE II.



Erythema Multiforme Circinate-type.

Erythema Figuratum occurs in gyrations formed by coalescence of two or more annular circles.

Erythema Induratum is considered with the tuberculous affections of the skin.

Erythema Marginatum is that form of the disease in which a distinctly elevated and defined marginal band is left as the sequel of an erythematous patch.

Erythema Papulatum (or **Papulorum**) and **Erythema Tuberculatum** (or **Tuberculosum**) are those forms in which occur lesions respectively of a papular or a tubercular type.

Erythema Urticatum is that form in which there is severe itching, and, as a result, scratching of the lesions, with crusts of dark dried blood at the summit of each. The crust is surrounded by the light-red or bluish-red, flattened or elevated patch characteristic of the disease.

Erythema Vesiculosum and **Erythema Bullosum** are exceptional forms in which the exudation is sufficient to raise the horny layer of the epidermis into larger or smaller serum-containing chambers, which may be, as regards the erythematous patch, of central or peripheral situation, and which may crown the summit of papule or tubercle. The fluid is usually removed by absorption, and is rarely set free by rupture of the vesicle or bleb.

Erythema Iris (**Herpes Iris**, **Hydroa Vésiculeux**) is the result of successive erythematous centric lesions, which at times form several differently shaded concentric rings.

At the onset there appear one or several vesicles or vesico-papules, which pursue their rapid career in two or three days. Upon the hyperæmic ring which surrounds these lesions a second and even a third and fourth circlet of similar lesions form, each pushing the areola further to the periphery of the patch. The older lesions are in full retrogression, while the newer vesicles are in process of evolution; and the red blush which surrounds the earlier lesions is undergoing color-changes from vivid to purple and paler hues, while the zone of the latest vesicles is assuming its intensest shade. The lesions are pinhead- to pea-sized, rather persistent and firm, and terminate more often by resolution than by rupture and crusting. The concentric and parti-colored rings may make up a single patch an inch or more in diameter, or several such patches may form upon the surface of the integument. In the latter case the central disk of some of the patches will be seen to be composed of confluent lesions. The subjective sensations produced are usually trifling.

Atypical forms occur in which the lesions are developed imperfectly from papules, and also in which, in consequence of an unusual exudation of serum, bullæ appear. These may coalesce or be filled with blood; or hæmaturia may result, with severe involvement of the mucous membrane of the lips, the tongue, the soft palate, and other parts of the mouth, ulceration rapidly ensuing. Cases with these complications should really be classified with the grave forms of pemphigus, to which they properly belong.

Erythema Nodosum (**DERMATITIS CONTUSIFORMIS**; *Fr.*, **ERYTHÈME NOUEUX**) is a form of erythema multiforme, regarded by several

authors as a distinct affection, in which the characteristic lesions are of the dimensions of semi-globular pea- to fist-sized tumors, pale red to livid blue in color, tender upon pressure, and exhibiting in their involution the variegations of hue already described. They occur chiefly upon the legs and dorsum of the feet, but also more rarely upon the trunk and the face. Though occasionally becoming so soft to the touch that fluctuation may seem to be present, they never terminate by suppuration.

Unna lays stress in the distinction between this disease and erythema multiforme upon the fact that the lesions of erythema nodosum never widen concentrically, never produce bullæ, and never exhibit annular vesicles.

The nodose lesions occur most often in youth, in girls more often than in boys, with acute or subacute symptoms frequently with rheumatoid pains and febrile temperatures. The oval or roundish, erythematous or empurpled nodes, varying in size from that of a small nut to that of a pigeon's egg, are most often seen on the lower limbs, though they appear also on the thighs, the buttocks, and the forearms. They are usually tender on pressure, and often painful. They may disappear in a fortnight, but occasionally observe a stadium of six weeks' duration, forming and disappearing in crops. The petechial appearance of the spots where they have existed is that of the characteristic "black-and-blue" mark. By some authors this disease is recorded as associated with tuberculosis, an observation probably due to the fact that it appears so often among the poorly nourished and ill-housed. It unquestionably occurs most frequently in the spring and autumn, and is not infrequently associated with arthritis or a rheumatic diathesis. Other causes cited are: malarial chills, temperature-changes, endocarditis, urethral irritation (blennorrhagic, instrumental), medicamentous ingesta, alcoholic excesses, and dentition (?).

A number of medicaments, when ingested or externally employed, are capable of producing eruptions identical in appearance with the lesions of erythema multiforme. For descriptions of these the reader is referred to the sections devoted to *Dermatitis Medicamentosa* and *Dermatitis Venenata*. Quinine, arsenic, belladonna, chloral, salicylic acid, iodine and bromine compounds, and other substances are often responsible for these symptoms.

The name "multiforme," given to this disease by Hebra, is justified by the singular diversity of lesions which it displays. These lesions are remarkable, not merely for their variety, but also for their occurrence in such variety both simultaneously and successively, and for their rapid change from one type to another.

The subjective symptoms, save in the urticarial form of the disease, are usually of a trifling character. The slight sense of heat and burning awakened by the lesions is altogether out of proportion to the extent of their development.

The symptoms, however, indicative of a general disturbance of the system may be of a marked character. General malaise, fever, inappetence, pharyngeal inflammation, chills, severe gastro-intestinal dis-

order, rheumatoid involvement of the articulations, and even organic changes in the heart (valves, endocardium, and pericardium), lungs, and kidneys have all been noted as coincident or as causative phenomena. In many of these cases it is clear that the exanthem belongs to the list of symptomatic erythemata, and that it is of insignificance in comparison with the grave general condition. It may thus be the precursor of typhoid fever, malaria, or severe articular rheumatism, or may become even an abortive expression of these disorders. With these exceptions, however, the prognosis is in general favorable, as the disease may terminate in a few days, and rarely exceeds a month in duration.

Occasionally the mucous membranes are affected to a disagreeable or even painful extent. Thus, a sudden tumefaction of the uvula may supervene upon the cutaneous symptoms, in cases sufficient to impede respiration; or the lining membrane of the larynx may be involved, and the resulting aphonia in various degrees persist for two or three days.

Etiology.—The affection is commonest in the spring and autumn; it occurs in the young or in the early periods of adult life; the papular and tubercular forms are more common in men, and the nodose forms in women; many patients are affected with rheumatism. In two valuable contributions to the study of the visceral complications of the erythema group Osler¹ has shown that the cutaneous symptoms may be merely surface-expressions of a visceral disorder; and indeed that the skin-symptoms may wholly be absent when the disease is in progress. In the eighteen cases studied by him there were three sets of symptoms: (a) polymorphous skin-lesions, including acute circumscribed œdema, urticaria, purpura, and ordinary forms of erythema multiforme; (b) visceral lesions, including (1) gastro-intestinal crises in which severe colic, with or without vomiting, diarrhœa, or bloody stools, was frequent, (2) hæmaturia and nephritis, (3) hemorrhages from mucous surfaces, (4) cerebral symptoms, (5) pulmonary complications; and (c) infiltration of synovial sheaths and periarticular tissues, and arthritis. In some of his cases a given visceral lesion had been accompanied at different times in the same individual by each of the types of cutaneous lesions.

The etiology of erythema multiforme includes a list of varying and widely differing causes. Among the concurrent disorders may be named: cardiac affections, diphtheria, toxæmias, and neurotic disturbances. Severe manifestations of the disease have been observed in a young woman with extensive ulceration of the cervix uteri. Tilbury Fox noted a frequency of symptoms in young servants brought to town from the country. It is not rare in young female immigrants who have recently made a "steerage" passage to America. Mackenzie² has called attention to the relationship of erythema multiforme to rheumatism and to purpura rheumatica.

There can be little doubt that erythema multiforme, arthritic purpura, urticaria, and acute circumscribed œdema are closely related.

¹ Amer. Jour. Med. Sci., December, 1895; and Brit. Jour. of Derm., July, 1900.

² Brit. Jour. of Derm., April, 1896.

The reasons for such belief, as stated by Osler, are: the similarity of conditions under which these disorders occur, the identity of the visceral manifestations, and the substitution of these affections for each other in one and the same patient at different times.

Pathology.—Erythema multiforme is essentially a hyperæmia of the integument that, under certain obscure influences, advances more or less rapidly to the stage of a mild grade of inflammation with consequent exudation. If, with Landois and Lewis, it be accepted that the process is the result of vasomotor nerve influence, it cannot be determined whether these nerves are irritated at their points of origin or of distribution. In the case of erythema nodosum Hebra advanced the hypothesis that the morbid process is essentially an inflammation of the lymphatic vessels. In some cases it is evident that there is extravasation of blood from the vessels into the skin of the affected part.

Leloir¹ discovered in the papules, tubercles, and bullæ of erythema multiforme only the phenomena of hyperæmia and exudation limited to the corium and subcutaneous tissue; and Villemin² simply confirms these facts. Singer³ has shown that the skin-lesions in erythema multiforme are for the most part evidences of staphylococci and streptococci in the blood. Crocker, examining a patch of erythema tuberculatum, recognized merely a cell-effusion in the upper portion of the corium extending sparsely below, and then chiefly along the ducts and follicles. There was slight rete-proliferation. Unna recognizes both in erythema multiforme and erythema nodosum: vascular dilatation, cell-proliferation especially around the vessel-walls with cell-emigration, and œdema of the cutis. In two cases of the iris-type Pardee⁴ found simply an acute exudative inflammation of the upper part of the corium.

There is evidently a toxin responsible for these changes, the nature of which has not been determined.

Diagnosis.—Erythema multiforme is always to be carefully distinguished from the traumatism producing bruises, especially upon the lower extremities. This point may have an interesting bearing upon certain medico-legal questions, especially in the case of young children.

The tendency of the disease here considered to symmetrical arrangement upon the two sides of the body, the occurrence of lesions evidently dating from several periods in which successive crops appear, and the absence of all history of external injury, will usually suffice to establish a diagnosis. Among the precocious affections of the subcutaneous connective tissue in syphilis Mauriac described a lesion resembling somewhat the symptoms of erythema nodosum; but in such cases, and especially in women, mucous patches of the vulva, of the anus, or of the mouth, with coincident adenopathy, would point to the real nature of the disease. Syphilitic nodes and gummata are distinguished

¹ Bull. de la Soc. anat., 1884, p. 294.

² Gaz. hebdom., 1886, Nos. 22 and 23.

³ Wien. klin. Woch., 1897, 38.

⁴ Johns Hopkins Hosp. Bull., July, 1898.

from the lesions of the nodose forms of erythema by the pain attending the former, their fewness, their overlying integument untinted save when actually softening and approaching disintegration, their obviously subcutaneous site, and the usual concomitant symptoms of late lues.

The chief points by which a diagnosis of the erythemata in general is established are: the recognition of the vivid coloring of most of the lesions; their œdematous character; their symmetry as a rule; the pigmentation following those situated on the lower limbs; their frequent association with rheumatism or rheumatoid pains, febrile phenomena, malaise, or other constitutional disturbances. The wheals of urticaria are smaller, more whitish centrally, more closely packed together, less symmetrical, rarely grouped, and, as a rule, decidedly more acute than those of erythema. Cases difficult to assign to either disease are common, and an error in either direction is not serious. Rubella (German measles) is to be distinguished by its adenopathy, its pharyngeal symptoms, and its flattish spots. In eczema erythematosum there is less definition of each patch, and the redness is commonly diffuse; papular forms of eczema are usually commingled with other readily distinguished symptoms of that disease.

Potassium iodide and a few other drugs administered internally are capable of producing almost every one of the lesions described above. In the erythemata for which iodine and bromine salts have been administered, with the production of skin-symptoms, the confusion produced becomes a fruitful source of error.

Treatment.—As in the majority of instances the disease under consideration progresses naturally to a favorable termination within the course of a few weeks, the duty of the physician is usually limited to the question of diagnosis and to a study of the etiology in each case, with the purpose of preventing future attacks. He should remember that the larger lesions seen in erythema nodosum never suppurate, and thus should not be tempted to open them with a lancet. Local treatment is often unnecessary. For the relief of the slight burning or itching present in some cases a dusting-powder, sedative or antipruritic lotion, or other protective dressing may be employed. Bullæ and vesicles should be evacuated and protected with a simple antiseptic dressing. Internally such medication should be employed as is indicated by the general condition of the patient. Iron, quinine, the salicylates, salol, strychnine, and dilute hydrochloric acid will be found beneficial in many cases. Constipation and indigestion are to be corrected by appropriate measures. When the disorder accompanies rheumatic or other systemic disease internal treatment is to be directed to the general condition present. When the erythema produces extensive œdema of the uvula incisions may be requisite to prevent dyspnœa and dysphagia.

Prognosis.—It will be gathered from what has preceded that the prognosis is usually favorable, but necessarily varies with the constitutional disease of which the erythema may be a mere symptom. The malady may relapse in susceptible individuals at those periods of the year when it is most frequently observed.

PELLAGRA.(Lat. *pellis*, the skin; *æger*, diseased.)

(LOMBARDY ERYSIPELAS, LOMBARDY LEPROSY, RISIPOLA LOMBARDA, LA ROSA, MAL ROXO.)

This disease has attracted attention by its extensive ravages in Lombardy and the contiguous provinces, including a portion of Southern Egypt, France, and Spain. It is a constitutional epidemic disorder, accompanied by an exanthem which justifies its brief consideration in this connection.

Symptoms.—The earliest symptoms of the disease, usually first noted in the spring, are prodromic, and characterized by marked fatigue, malaise, and occasionally by febrile symptoms. Soon the face, neck, chest, backs of the hands, and forearms (when exposed to the sun) are affected with a symmetrical erythema of a dull lurid hue, disappearing on pressure, which may be accompanied by desquamation, occurring in successive years chiefly in the summer season, often fading in the autumn, at times with desquamation. After frequent relapses the skin becomes of a dark olive-brown, bluish-red, or deeply pigmented and bronzed hue, and general exfoliation of the epidermis follows in large flakes. Simultaneously, an extraordinary degree of muscular feebleness is noticed; the skin becomes at first pruritic or hyperæsthetic; later, distinct atrophy occurs; and a sensation of chilliness is induced, similar to that observed in general exfoliative dermatitis. As in that disease also, the fingers gradually become semiflexed into the palm, and gastro-intestinal derangements supervene, accompanied by a furred tongue, inappetence, colicky pains, and diarrhœa. Disorders of the nervous system are betrayed by melancholia, disturbed vision, idiocy, convulsions, and symptoms of meningitis. Post mortem, pachymeningitis, with induration, atrophy, and other secondary changes in the brain and cord, have been observed.

The erythema displayed is one corresponding largely with that of the other symptomatic erythemata. Its colors are in different hues according to the age and sex of the patient and the stage of the disease. It disappears under pressure at first; later it may persist even before the pigmented condition is produced; it may be of congestive type and accompanied by bullous efflorescence and crusting with erosive features. It may subside in a fortnight not to return, or return with successive seasons till the integument becomes gradually wrinkled, thinned, and in the xerodermatous state of impoverished senility.

After the eruptive symptoms the important features are: the muscular feebleness, the remarkable tendency to chills alternating with febrile accesses, the flexion, more or less persistent, of the fingers into the palms, and, in fatal cases, changes in the nervous centres, such as pachymeningitis and sclerosis of nerve-tissue, producing during the life of the patient paralytic and paretic symptoms, melancholia, imbecility, and dementia.

Etiology and Pathology.—Pellagra originates in the use, as an

article of diet, of maize which has been improperly dried or has developed deleterious substances after its reduction to a coarse powder. Lombroso¹ has produced the symptoms of the disease experimentally; and has demonstrated as etiological factors toxins developed during the spoiling of maize, though numerous mycotic and parasitic organisms are also present during the process, pure cultures of which produce no symptoms of the malady. In 113 autopsies, of which 70 were made by himself, Lombroso discovered: exudation into the membranes of the cord, liver, kidneys, and spleen; atrophy of viscera supplied by the vagus: fatty degeneration of kidneys, liver, myocardium, and vessels and cells of the cord; pigment-changes in cells of brain, cord, liver, kidneys, and heart; atheroma, calvities, dermato-sclerosis, and sclerosis of cord. Individuals have suffered from the disease, it is true, who never partook of maize, and also those who were not specially exposed to the action of the sun, which in some cases seems to have served as an aggravation of the malady. The wretchedness, poverty, poor food, and moral and social condition of the inhabitants of pellagrous districts, many of them toiling under a burning sun, half-starved, emaciated, and despairing, explain in part only the symptoms of the scourge which afflicts them.

The distinction between pellagra and pseudo-pellagra has an etiological basis: one class of patients suffering from classical symptoms solely produced by the specific toxins of the disease; the other class debilitated by alcoholism, malaria, uræmia, and other morbid factors. In cachectic men and women who have never been exposed to the sun and have not been known to be poisoned by eating decomposed or fermented maize, the symptoms of pellagra have been noted; while in others mere exposure to the rays of the sun of the cachectic and of those suffering from visceral maladies (gastric carcinoma, disease of the suprarenal capsules, etc.) has not produced characteristic lesions of pellagra.

The **Treatment** is by prophylaxis; improvement of the hygienic and climatic conditions of the patient; quinine and tonics in cases of debility; proper management of nervous and gastric troubles; and, when practicable, a generous dietary. Lombroso recommends, as a prophylactic measure, care in the storing of grain.

The **Prognosis** is favorable in some cases, which may be so mild as to be scarcely noticeable; in others it is grave; and in districts where the disease prevails extensively the mortality may be formidable.

ACRODYNIA (EPIDEMIC ERYTHEMA) is an affection suggesting in its symptoms those of pellagra. It first occurred in Paris, in the year 1828, in an infirmary for aged men; and has been since recognized in epidemic form in France, Belgium, Algiers, Mexico, and a few other countries.

The disease begins with facial œdema, gastric distress, conjunctival injection, and hyperæsthetic symptoms, with a sense of formication and pricking in the parts chiefly affected. The cutaneous lesions are erythematous, displayed in points over the extremities, and especially over

¹ Die Lehre v. d. Pellagra. Coblentz, Berlin, 1898.

the hands and the feet, particularly their palmar and plantar surfaces. It has either a simple or a polymorphic expression, and is concluded by a furfuraceous or lamellated desquamation. When fluid-containing lesions are produced, these are either vesicular or bullous, and filled with limpid or reddish contents. When the consequent exfoliation occurs over the palmar and plantar surfaces there may be a desquamation similar to that occurring in some of the exfoliating dermatoses, large horny flakes and casts being either firmly adherent to, or separable from, the tissues beneath.

The grave complications of cases are: œdema followed by atrophy, paretic symptoms, febrile and gastric complications, and senile marasmus.

One of the most characteristic features of the disorder is the blackish hue of the skin of affected persons over the breasts, belly, flanks, chest, axillæ, and inguinal regions.

The **Pathology** is obscure; the **Treatment**, that indicated by the general ill-health of the patients; and the **Prognosis**, unfavorable.

URTICARIA.

(Lat. *urtica*, the nettle.)

(HIVES, NETTLE-RASH. *Fr.*, URTICAIRE; *Ger.*, NESSELSUCH, NESSELFIEBER.)

Symptoms.—This disorder may be ushered in by constitutional symptoms, such as inappetence, malaise, cephalalgia, or mild pyrexia phenomena lasting for a few hours or even a day or more.

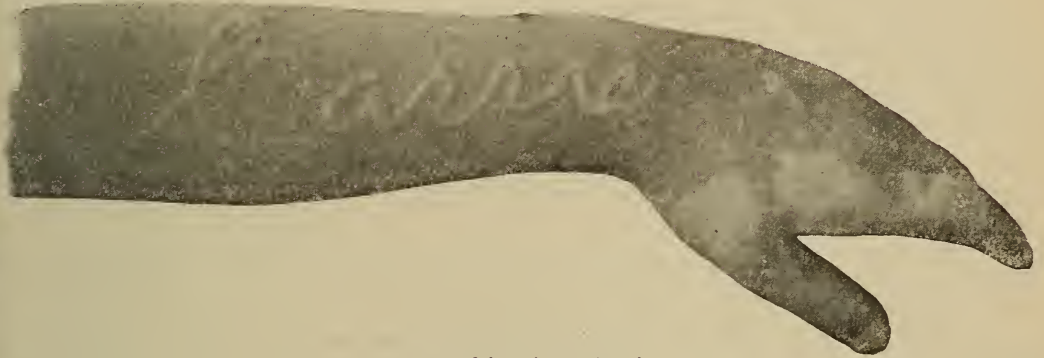
With, and often without, such prodromic symptoms the eruption suddenly appears in the form of wheals upon the skin-surface, that frequently disappear with equal rapidity, leaving no traces of their existence save a slight and transitory hyperæmia of the affected spot. The lesions may be as small as a finger-nail or a coffee-bean, and usually are of this size; but in rare instances “giant”-wheals are seen—large tomato-sized projections or flat elevations of broad areas of the integument, that cover the greater part of the belly or buttock. In color the lesions are rosy red or whitish, and are usually surrounded by a hyperæmic areola. They may be isolated and few, or be numerous and closely packed together; they may even coalesce, so that individual wheals are scarcely recognizable. They are usually firm and semisolid to the touch. Rarely, the horny layer of the skin is raised in fluid-containing lesions by the sudden effusion of serum beneath. In contour they are roundish or oval-shaped, but a variety of curious outlines may result from the irregularity of their development. Concentric circles, lines, bands, and even figures are in this way produced. The finger-nail drawn across the unaffected portions of the skin of a patient with urticaria will often produce a linear wheal (“urticarial autogram”) of extent corresponding with the line of irritation (dermographism). In this way the so-called “medium” with a sensitive skin exhibits written characters upon the surface of his body.

The subjective sensations induced by these lesions are distressing

in varying degrees, according to the susceptibility of the individual. Every grade of pruritic burning, tickling, crawling, pricking, and especially stinging sensations, is thus engendered. The efforts of the patient to secure relief by scratching not only serve still further to develop the eruption, but also to irritate, tear, and otherwise wound the lesions already in full evolution. In this way serous effusions are produced at the summits of the wheals; and in this way, also, lesions really transitory in their course may be changed to more persistent, deeply colored, flat, lenticular papules. Where the skin is delicate and thin, as is that of the lids and prepuce, considerable œdema may result.

All parts of the body may become affected, irrespective of age and sex, though children are particularly liable to the disease. There are few very young children with skins unwashed for an entire month

FIG. 40.



Autographism in urticaria.

who will not exhibit urticarial symptoms if there be an added irritation of the surface. The disease occasionally involves the mucous membrane of the mouth, pharynx, and larynx.

The lesions numerically may be few or be so numerous as to cover the entire surface of the body. Though more frequently acute in course, they often recur from apparently insignificant causes, or even become chronic. In many cases trivial the disease may become so aggravated as to make the largest demands upon the skill of the physician.

The rapidity of appearance and disappearance of the lesions visible upon the skin is a characteristic feature of the disease. In some instances but a few moments are required after the operation of an efficient cause to develop a large number of closely packed wheals. Even while they are under inspection it can be noted that there is a change in individual lesions, some fading or completely disappearing, while others are newly developing.

A number of names have been employed to designate the several external peculiarities of the lesions as they are presented to the eye. Thus, *Urticaria annularis* occurs in rings; *U. figurata*, in gyrations from union of several lesions or patches of lesions; *U. vesiculosa* and *U. bullosa*, where there is a vesicular or bullous development at the summit of the lesion; *U. papulosa* (or *Lichen urticatus*), where there

is a combination of the features of the wheal and the papule, the lesions being naturally grape-seed- to coffee-bean-sized, and covered with blood-crusts where their apices have been torn in scratching; *U. tuberosa*, where "giant"-wheals occur, some attaining the size of a hen's egg; *U. hæmorrhagica* (*Purpura urticata*), where the urticarial element is developed in a lesion produced by cutaneous hemorrhage; and *U. evanida*, or *perstans*, where there is, respectively, a rapid or a slow process of involution in the characteristic symptoms.

Baker¹ reported a case of *URTICARIA TUBEROSA* characterized by the presence in various parts of the body of persistent yellowish-red tubercles, which proceeded to ulceration. The parts most affected were the knuckles, the elbows, and the ear. These tubercles are said to have begun in a manner similar to that which characterizes the onset of evanescent urticarial wheals and tubercles. A somewhat similar case was observed by McCall Anderson.²

Urticaria, like erythema, may be either idiopathic or symptomatic; and in each form the urticarial conditions may underlie or be superimposed upon almost every elementary lesion noted in the integument. The wheal may complicate (or be complicated by) the macule, papule, tubercle, vesicle, bulla, and pustule. It may spring from an excoriation or may result in a fissure. It is common in traumatisms, and is a prominent symptom in the skin bitten by insects, reptiles, or domestic animals.

Etiology.—Idiopathic urticaria always results from the action of external irritants, prominent among which are the bites or stings of mosquitoes, lice, fleas, bedbugs, gnats, wasps, caterpillars, and bees. The irritant action of the nettle (*Urtica urens* and *U. dioica*) has given the malady its name. Contact with certain species of the jelly-fish is also effective. The wounds thus inflicted usually give rise to a stinging or a burning sensation, by which the patient is excited to rub or scratch the part. A wheal is rapidly formed at the site of the injury, and the irritation set up is conveyed to other parts of the skin in the vicinity, so that, especially in children, a single traumatism by an insect may excite an urticaria covering a much larger area. Many medicaments operate similarly, and it should be added that all the external agencies which are capable of irritating the skin, though applied without toxic effect to the mass of men, may produce urticaria in individuals predisposed to the disease, or having a peculiar intolerance for a particular substance. Thus, a common flaxseed poultice when made to cover but a small portion of the body has produced violent symptoms of urticaria. Climatic influences, more particularly those in which the surface of the body is exposed to cold air, are efficient in the production of urticaria, as also of bronchial asthma, with the symptoms of which the disease under consideration, in the case of adults, may often coexist or alternate. Mechanical violence, the application of leeches to the skin-surface, and surgical traumatisms may also act as exciting causes.

Symptomatic urticaria is chiefly of the variety named by authors *ab ingestis*, since it most frequently results from medicinal or from

¹ Lancet, August, 1881, p. 153.

² Brit. Med. Jour., December 8, 1883.

dietary articles taken into the stomach. Of the latter class may be named eggs, cheese, pork, sausage, coffee, tea, cocoa, confectionery, crabs, lobsters, clams, caviar (and several species of fish-roe), oysters, and fish generally, strawberries, cucumbers, skins of grapes, nuts, dates, raisins, almonds, figs, prunes, gooseberries, raspberries, canned ("tinned") fruits, meats, vegetables, oatmeal, pease, beans, onions, garlic, "corn," pickles, sauces, honey, mushrooms, pastry, salads, and spinach. Vinegar, champagne, beer, and alcoholic beverages in general are capable of inducing a similar effect.

Among the medicinal articles capable of inducing urticaria may be named the balsams, the turpentine, quinine, glycerin, chloral, valerian, arsenic, hyoscyamus, cinchonidine, salicylic acid and the salicylates, senna, santonin, and opium and its alkaloids.

In the case of children and infants a severe urticarial efflorescence may be provoked by worms, or by any undigested morsel of food, or indigestible material of any sort that may have been passed into the stomach. Thus, a bit of orange-peel or a fragment of potato-paring or the skins of grapes may be discovered to lie at the root of the trouble. In the case of adults, also, who have experienced repeated attacks of urticaria, and suffer from sensitiveness of the gastrointestinal tract, any food not easily digested by a given individual may induce in him a return of the disagreeable symptoms.

This undue sensitiveness to the effect of ingesta or of external irritants is often an idiosyncrasy peculiar to the individual either on special occasions or at all times, and, given this susceptibility, the effect is often great with a relatively insignificant etiological factor. Thus, a teaspoonful of beer, one grain of quinine, the smallest fragment of cheese, or but a single strawberry, may not only induce an urticarial rash of such extent as to cover the greater part of the surface of the body, but will also do the same on every occasion when the articles named are swallowed in the quantities given. The fact that a small quantity of the article ingested can produce urticaria is important, because it emphasizes the general characteristics of the medicamentous eruptions. The *a priori* reasoning, that the greater the quantity of the toxic agent applied or swallowed, the graver the effect, may lead to gross errors. It should be remembered, in seeking the explanation for an urticarial rash, that the smallest amount of apparently innocent substances may be responsible for the largest annoyance. In exceptional cases the mere odors of iodoform, linseed, liquorice, certain plants, etc., have been sufficient to cause an attack of urticaria.

Other causes of urticaria may be cited, such as moral emotions (fear, shame, anger); pulmonary diseases, especially asthma; gastro-intestinal disorders, in which ingesta play no part; intestinal parasites; malaria; the exanthematous fevers, particularly in their prodromal stages; disorders of the uterus, the kidneys, and the nervous centres; pregnancy, dentition, and the irregularities attending the menopause; and, lastly, the following special diseases: pemphigus, prurigo (of Hebra), rheumatism, and purpura.

The close affinity of urticaria with acute circumscribed oedema, purpura, and erythema multiforme is discussed with the last-named disease.

Pathology.—Urticaria is undoubtedly a vasomotor neurosis. The wheal is a sharply circumscribed œdema, and is produced apparently by an interchange of play between blood-vessels, muscles, nerves, and tissue, under the operation of a principle which the French term *choc en retour*. There is, first, most probably under the influence of the vasomotor nerves, a clonic spasm of the capillaries in a limited area of the derma, by which is produced an acute œdema with some serous exudation. The rapidity with which this clonus occurs is greater than that with which the tissues of the vicinage can accommodate themselves to it, either by imbibition or more diffuse tumefaction, and there results a counterpressure upon the affected capillaries, by which their lumen is still further restricted. As the wheal is not a purely fluid-containing nor yet an entirely solid lesion, but is semifluid in consistency, the mechanical pressure is greatest at its centre and least at its periphery. Thus are explained the white and relatively bloodless appearance of the centre of certain wheals, and their rosy or reddened outer border. The explanation is strengthened by the fact that generally the most acute lesions, those springing into view most rapidly, are chiefly characterized by this whitened centre, while those more indolent or even chronic in their career, having been less subject to the interplay of the forces described above, permit of more general vascular injection, and have a light-crimson or even at times a dull-red centre. Wheals have been excised and microscopically examined by Neumann, Vidal, Poncet, Unna, and others, with the result of discovering merely evidences of dilatation and engorgement of blood- and lymph-vessels. The deep vascular net shows the greatest dilatation of the lymph-channels. The compression of the blood-capillaries produces the whiteness of the acutely developed wheal. According to Poncet, the lymph-vessels are also choked with "lymph-clots." Rohé¹ explains the occurrence of the wheal by supposing that certain sensitive nerve-fibres of the skin possess also a vasomotor function.

Unna believes the wheal is produced by a spastic contraction of the veins. Gilchrist² found in the lesions of urticaria factitia of but a few minutes' duration an increase in the number of round cells and of polymorphonuclear leucocytes, and other evidences of true inflammation.

Diagnosis.—The diagnosis of classical urticaria is so readily made that the disease is often recognized before the attention of a physician is called to it. As usual, the atypical cases are those in which confusion may arise. The chief points to be remembered are: the rapidity of evolution of symptoms, their ephemeral duration, and the characteristic sensations they awaken. The action of the animal parasites and of insects not parasitic should not be overlooked, and the rash be closely examined for the minute wounds inflicted in this way, often covered with a minute pin-point- to pinhead-sized dried "blood-scale," and usually found in groups of two, three, or more lesions. The various forms of erythema papulatum, tuberculatum, and nodosum are liable to be mistaken for urticaria; but this is in many cases inev-

¹ Maryland Med. Jour., May 15, 1881.

² Johns Hopkins Hosp. Bull., July, 1896.

itable, as intermediate forms between the two disorders are with difficulty assigned to either category. Absence of marked subjective sensations and persistence of lesions would generally point to an erythema, while marked prevalence of these symptoms would probably decide in favor of urticarial disease.

In many cases the physician is consulted by a patient who gives a history of well-nigh intolerable distress at night or at other capriciously selected hours, and who repeatedly and vainly endeavors to exhibit the lesions as they appear upon the skin. Being examined on various occasions, scarcely a trace of cutaneous disorder is manifest. Here the practitioner has actually to decide upon the character of an eruption he never sees; the task is rarely difficult, no other than the urticarial eruption behaving in this fashion. Occasionally the physician will discover delicate, rosy or deeper stained mottlings of the skin-surface where the wheals have been. At times also he will succeed, on the flexor aspect of the forearm, or in some situation in which the skin is equally delicate, in producing the appearance of one or more typical lesions by the aid of his finger-nail in scratching, or by rubbing. These cases are more frequently of the chronic or at least of the relapsing class, and the victims of the disease may have a characteristic facies, a worn look from loss of sleep or from mental emotion. In this class are often those who are mourning the death of relatives, the loss of property, or separation from home and friends, and those harassed by anxieties.

The several lesions of erythema are larger than those of urticaria, and they do not develop from characteristic wheals; in erythema multiforme the lesions are far more persistent in type and do not provoke the characteristic subjective sensations of urticaria; in erysipelas the redness is characteristic and the swelling more diffuse.

Treatment.—Many cases of acute urticaria demand no treatment. The physician is summoned for a diagnosis. The patient and his friends are alarmed by the dread of variola or other severe affection, and learning that perhaps a pickled cucumber is alone responsible for the disorder, they wait with equanimity for the favorable conclusion which is always reached. Fortunately, the unusual, severe, and relapsing forms rarely begin with acute symptoms.

Naturally, the first indication to be observed is the removal of the cause, and with this, if possible, accomplished, the next is the exclusion of all aggravating agencies. The discovery of the cause, at times readily effected, is often the most serious problem presented. An exhaustive and minute examination of the person and the history of the patient, a study of his food, drink, medicine, régime, clothing, sleeping-apartment, habits, occupations of life, and mental state, are here essential. When the disorder is recent, and is an *urticaria ab ingestis*, a brisk emetic or a cathartic may rid the stomach or the bowels of offending matters. This done, it should be borne in mind that an idiosyncrasy of the patient may at this moment render the skin peculiarly sensitive to the action of other ingesta, and the diet, for a few days certainly, should be prescribed carefully. In many cases the alkalies are indicated by an acid condition of the stomach, and then the

preparations of sodium, potassium, or magnesium are useful. Laxatives, such as rhubarb, magnesia, the cathartic mineral waters, and, in the case of children, small doses of castor-oil are frequently indicated when there is no suspicion of irritating ingesta. At other times there is marked atony of the digestive organs, when the mineral acids, the bitters, and the ferruginous tonics may be needed. Again, lactopeptin, pepsin, or bismuth subcarbonate or subnitrate may be exhibited with advantage for the relief of the indigestion which may be the prominent feature of the attack.

Other remedies found useful in the internal treatment of urticaria are sulphurous acid in 1 drachm (4.) doses three times daily in sweetened water (Da Costa); copaiba; sodium nitrite (J. P. Sawyer); strychnine (Guibout); sodium arseniate, employed by Blondeau in doses of from $\frac{1}{30}$ (0.002) to $\frac{1}{50}$ (0.0013) of a grain; the fluid extract of ergot in $\frac{1}{2}$ drachm (2.) doses (Morrow); atropine sulphate in doses of $\frac{1}{60}$ (0.001) of a grain (Schwimmer); and sodium salicylate in scruple (1.33) doses. The latter drug has been praised highly by a number of writers. It is often given in 1 grain (0.06) doses every hour. Pilocarpine, or the fluid extract of jaborandi, is known to produce at times a powerful effect in relieving surface-congestions of the skin by means of the hyperidrosis it occasions, and in proportion to which it is produced the drug may become dangerous.

Schwimmer endorses the following formula for this affection:

R. Atropinæ sulph.,	gr. $\frac{1}{8}$;	0 01
Glycerin., }		
Aq. dest., }	āā 3 ss ;	2
Gum. tragacanth.,	q. s.	
Ft. pil. No. xx.		M.

The treatment of symptomatic urticaria should have regard also to that disorder of the viscera or of the general system to which the cutaneous symptoms may be attributed. Gout, as a not infrequent cause of the disease, should not be forgotten in advising treatment. The uterine complaint of a woman may require appropriate management, as also the diabetes of a patient with an affection of the kidneys. Quinine is indicated, of course, in periodical attacks, but its action in exceptional cases as a direct cause of urticaria should not be overlooked; the same, to a greater extent, is true of arsenic, potassium bromide and iodide, chloral hydrate, and gelsemium. The larger number of patients are best treated without the employment of these drugs.

In the local treatment of urticaria protection of the sensitive skin from all sources of external irritation is the chief object. The complete covering of an affected region with wadding will often cause a rapid disappearance of the symptoms. Individual lesions which are sealed with collodion or plaster usually disappear promptly. The zinc-oxide adhesive plaster is very serviceable, as it does not irritate the skin. The patient's underclothing should be of soft linen, cotton, or silk, and to prevent friction with the skin a dusting-powder may be used freely, both on the skin and in the meshes of the underwear. Sleep should be secured without an excess of bed-covering, and places where the temper-

ature is for any reason elevated should be carefully avoided by the patient, such as proximity to a fireplace or a droplight, heated places of amusement, the kitchen, etc.

Great diversity exists in the methods employed to assuage the disagreeable sensations experienced in the skin. This diversity is explained by the varying results obtained in different patients after the application of the same medicinal agent. Thus, cold and hot water-baths, baths medicated by marine salt, aromatic vinegar, alcohol, cologne, camphor, the alkalies, and sulphuric ether (compresses dipped in such solutions and laid over the part affected), douches, and vapor-baths will, any of them, in the case of some individuals, produce a marked alleviation of symptoms, and in others will be either inoperative or actually serve to aggravate the symptoms in the highest degree. Hebra asserts that several of the baths named above are useless, while Kaposi recommends cold lotions medicated with aromatic volatile substances. Fox prefers that alcohol, or cologne-water to which benzoic acid has been added, be dabbed over the part and permitted to evaporate. Solutions of menthol in alcohol and water, 1 part to 500 or 600, operate similarly. Hillairet and Gaucher employ in a similar way a solution consisting of one-third of ether and two-thirds of warm water.

The alkaline bath should contain sodium carbonate, sodium biborate, alum, or potassium bicarbonate, either singly or in combination in the strength of about 6 ounces (180.) of the salt to 30 gallons of water; 1 or 2 ounces (30.-60.) of potassium sulphuret may be substituted. The water is made demulcent by the addition of starch or of gelatin, or by immersing in it a muslin bag containing bran. When it is desired to employ the acid bath, $\frac{1}{2}$ ounce (15.) of either muriatic or nitric acid is added to the quantity of water given above. The bath of this size may also be medicated with 1 drachm (4.) of corrosive sublimate; or this drug may be used as a lotion in the strength of from $\frac{1}{4}$ (0.016) to $\frac{1}{2}$ (0.033) grain to the pint. Carbolic, benzoic, salicylic, boric, dilute hydrocyanic, and dilute nitric acids in weak solution are also employed with advantage in some cases.

Other external applications are thymol, ammonium carbonate, potassium bromide, ether, chloroform, or chloral-camphor in the strength of $\frac{1}{2}$ to 1 drachm (2.-4.) to the ounce (30.) of ointment. This ointment is prepared by rubbing together equal parts of camphor and chloral until a semiliquid results. The preparation is an antipruritic remedy of value, but if not largely diluted will increase the uneasy sensations produced. In other cases an oily or fatty substance will give more prompt relief, especially if the eruption has been irritated by scratching and tends to persist. Among useful applications may be named the linimentum calcis of the pharmacopeia, and cold-cream salve, to which may be added fluid extract of grindelia robusta, 1 part to 20 or 30 of vehicle; also the dusting-powders, which are described in the chapters relating to General Therapeutics and the Erythemata. These powders are the most cleanly of all external preparations in urticaria, and are often the only local measures required. Among the Germans sulphur, naphthol, and tar-salves are employed in the management of the disease.

One of the most effective and trustworthy of local applications in

severe urticaria is a starch solution. The starch is first mixed with cold water, and is then boiled until the solution is of the consistency of thin mucilage. To each pint of this 1 drachm (4.) of zinc oxide and 2 drachms (8.) of glycerin are added before ebullition is completed. When cool and applied to the surface this solution often gives prompt relief. The same is true of a thin solution of boiled oatmeal.

Such is the empirical treatment of urticaria. It is founded upon no rational method of procedure, because the very capriciousness of the disease demands and secures relief in one instance by a treatment which should be reversed in another. It must be admitted that cases occur in which all treatment seems absolutely valueless, often really injurious, to the patient. These cases will usually be found to be of the relapsing or chronic type. The subjects of this form of disease are often plunged into morbid mental states, dreading by day the exacerbations of the night, brooding over misfortunes experienced or anticipated, worn by loss of sleep, fearful of a generous régime at the table. Here the treatment is largely moral, and demands the tact and courage of the physician. Travel, change of climate, variation in the routine of life, new social surroundings are here valuable. The widow must be made to lay aside the heavy crape-veil beneath which her urticaria plays; the solitary patient must secure an acceptable companion for a few hours each day.

It seems probable that to these efficient agencies must be in part ascribed the relief so often obtained at various mineral springs, both in America and abroad. Thus, the Karlsbad, Vichy, Saratoga, and White Sulphur Springs have all been credited with the production of beneficial effects in urticaria.

Prognosis.—The prognosis of an attack of urticaria is, as may be seen in what has preceded, exceedingly variable in different cases. Simple attacks of the acute sort are trivial, and in a few days the patient may retain but the slightest traces of the trouble. In the case of children the attack is often at an end in the course of twenty-four hours.

It should, however, never be forgotten that urticaria may torment the life of a patient to the utmost bounds of tolerance and seriously impair the general health. Persistent and rebellious chronic urticaria may prove to be a more formidable affection than a mild attack of syphilis.

URTICARIA PIGMENTOSA (XANTHELASMOIDEA, Fox).

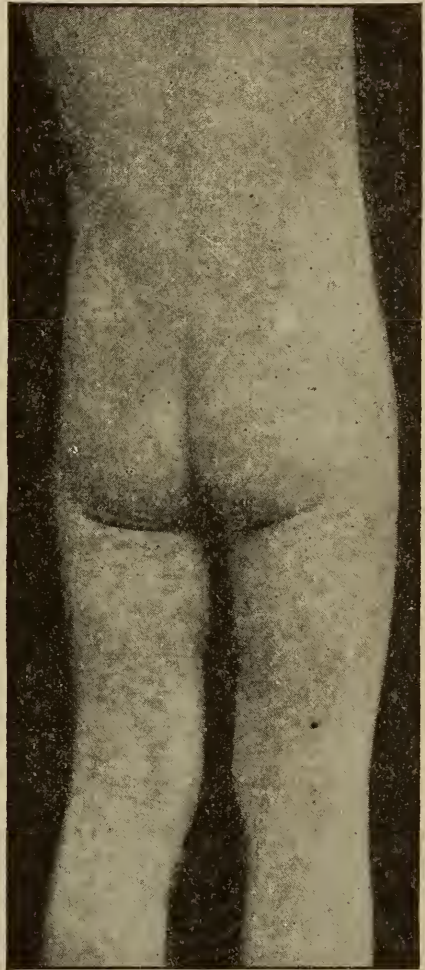
Symptoms.—This disorder, once regarded as an affection of great rarity, has now been recognized in almost all the large centres of population. The disease is characterized by the occurrence in early infancy, sometimes but a few hours or a few weeks after birth, of elevated, rosy or reddish, round or oval wheals and nodules, which are succeeded later by flattish or slightly elevated, light or dark-brownish or buff-colored macules. Exceptional cases are reported in which the disease made its first appearance a number of years after birth. There are three tolerably distinct types of the affection: those exhibiting

plane lesions with equally flattened maculations; those with tubercular, nodular, or variously sized and shaped wheals; and mixed varieties, the latter being commonest. The mingling of a factitious urticaria with lesions long existing and long maculated is not rare. A characteristic feature of this form of urticaria is the tendency of the wheals to recur at the same site, and where pigmentation remains new wheals may be produced by irritation. Cases may be classified into those accompanied by itching and those not thus characterized; but these differences are due to accidental rather than to essential causes. The eruption, which at the outset may appear as late as the third year, commonly displays itself first on the neck and shoulders, and then rapidly spreads to the head and the extremities, eventually invading the entire body-surface—in well-marked cases even including the mucous membranes. The lesions are at first of the usual urticarial type, each with delicate zone, but soon lose their distinct contour and elevation, and become flatter and pigmented, the color in pronounced cases being a distinct yellow, deepening to a decided coffee-and-milk hue. After isolated tubercles once acquire the deeper tint they may persist for years; may return in crops; may even at times be commingled with bullæ which desiccate in crusts; may form plaques of infiltration; may be covered with an erythematous blush due to hyperæmia of parts long affected; and, when itching is intense, may exhibit the general signs of the scratched skin. In a few of the reported cases the nodules were modified by vesicles and vesico-pustules, and were followed by whitish, instead of pigmented, spots in a smooth or wrinkled and scar-like skin.

Etiology.—The cause is unknown. The sexes are nearly equally represented among patients.

Pathology.—Sections of tubercles have been made by numerous observers, including Unna, Raymond, Pick, and Thin. It is clear that some effusion occurs in the corium with cell-infiltration and small hemorrhages. The disorder is unquestionably an angioneurosis due to special changes of the vasomotor centres. Unna has demonstrated that the papillary body in these cases is distended by very large flattened mast-cells, the accumu-

FIG. 41.



Urticaria pigmentosa.

lation of which flattens the epidermis above. They lie closely packed together arranged in columns by reason of persistence of the collagenous tissue, between which when spastic œdema is present wide lymph-spaces open.

Diagnosis.—Urticaria pigmentosa is to be distinguished from the slight pigmentation left after well-marked urticaria of later years by the beginning of the disease in infancy and by the persistent buff-colored tubercles. Xanthoma in all its forms is readily distinguished by its persistence in special regions, the eyelids, for example; by its first appearance in many patients at a later period of life than infancy; and by its characteristic chamois-leather-yellow shade.

Treatment.—No treatment has hitherto been so successful as to justify its recommendation. The internal remedies and local applications advised for urticaria have been employed with varying degrees of success. The best results are obtained after stimulating rather than soothing baths, at a later period of life than during the first six months. After such stimulation with salt and water or alcohol and water a boric-acid dusting-powder may be employed.

ANGIONEUROTIC ŒDEMA.

(ACUTE CIRCUMSCRIBED ŒDEMA, ACUTE IDIOPATHIC ŒDEMA, PERIODIC SWELLING, ACUTE NON-INFLAMMATORY ŒDEMA, GIANT SWELLING.)

This disorder described first by Quincke, and since by many other observers,¹ is characterized by the occurrence in successive and recurrent attacks, often acute, rarely persistent in character, of circumscribed, œdematous plaques, developing with acute symptoms and as rapidly disappearing. The surface of the affected area is commonly reddened in various shades, from a light rosy hue to a livid red. The plaques vary in size from that of a small coin to that of the section of a large orange, and may involve an entire organ or limb. As a rule, no itching is awakened. The swellings are commonly the seat of disagreeable sensations of fulness, burning, throbbing, or scalding; and if the swelling chance to obstruct a mucous tract (nasal, pharyngeal, laryngeal, etc.) there are symptoms of a distressing character, due to the transitory occlusion. The disease is occasionally noted in connection with urticaria, erythema multiforme, and purpura rheumatica.

Though each individual outbreak may be rapid of occurrence, the disorder responsible for the cutaneous symptoms is unquestionably chronic in duration; and it is the successive and repeated expression of its influence upon the skin that in rare cases produces a more or less persistent and obstinate cutaneous œdema limited to one portion only of the integument.

The lesions occur upon the conjunctiva, the pharynx, the larynx, (where even fatal obstructive consequences may result), and also as facial symptoms, especially upon the eyelids and the lips. The lesions are to be recognized also upon the extremities, the trunk, the penis, the scrotum, and the vulva. In some cases the disorder is well nigh

¹ Cf. Courtois-Suffit (*Annal. de Derm. et de Syph.*, 1889, p. 859).

universal. When the soles of the feet are involved the erect position is impossible without incurring severe pain. The persistent œdema, described later and attributed to recurrent attacks of erysipelas and lymphangitis, is not of this class. Wende¹ described a case of acute œdema of the dorsum of the hand followed in forty-eight hours by a similar lesion on the forearm, and in seventy-two hours by one on the face, the attack being accompanied by marked albuminuria and hæmoglobinuria.

The cellular tissue of the skin and mucous membranes is chiefly involved; but the papillary portion of the corium is also largely concerned in the morbid process, as is also the superior vascular plexus of the pars papillaris.

Diagnosis.—The disorder should not be confused with erythema multiforme, erythema nodosum, giant urticaria, syphilitic and rheumatic nodes, nor with pseudo-lipomas. Between these affections, particularly between the three first named, no precise lines of demarcation can be drawn, and the diagnosis must be made largely from the concomitant symptoms and from the absence, in circumscribed œdema, of itching or pricking sensations, febrile complications, and rheumatoid pains.

Treatment.—Circumscribed œdema is produced under the influence of the trophic and vasomotor nerves; it is, hence, amenable chiefly to those remedial agents which tend to influence favorably the nervous centres. Internally ergot, iron, nux vomica, quinine, and the sodic salicylate are indicated. As some cases are probably toxic in origin, efficient elimination should be secured. Diuretics, sudorifics, and cathartics are recommended by Besnier and Doyon. The local treatment is largely that of urticaria. In chronic cases salt and water may be applied over the region of the spine by the hands of a competent nurse. The salt is moistened with cold or slightly warmed water, according to the constitution and temperament of the patient, and is then briskly rubbed with a firm hand over the entire spinal region. The back is then sponged for several minutes with pure water, at first hot and gradually cooled, until the surface is well reddened, when, lastly, the surface is dried and the patient made to take moderate exercise. The result in cases is brilliantly satisfactory. As in chronic urticaria, mental anxiety and distress, especially in women, may be responsible for a great part of the trouble.

CIRCUMSCRIBED AND PERSISTENT ŒDEMA of a single member or region of the body, not of the class of successive and repeated swellings noted above, is properly considered with the early stages of elephantiasis. It results most often from a localized lymphangitis or so-called "recurrent erysipelas" (chronic eczema of the face, tumefaction of nose and cheeks due to obstruction by tumors of the antrum of Highmore), and appears upon the face usually as a smooth, shining, whitish or reddish tumefaction, ill defined as a rule, in a few cases with fairly good definition. The tuberculous toxins may be responsible for some cases. The swelling is usually of firm consistence, but can with some

¹ Jour. Cutan. and Gen.-Urin. Dis., 1899, vol. xvii., p. 178.

pressure be indented with the finger. It is always the seat of passive hyperæmia, never of active inflammation; but in the case of smokers of tobacco and hard drinkers an active inflammation is sometimes awakened. These patches are rarely painful or tender; advice is usually sought with a view to the relief of the consequent moderate deformity. The swellings occur as well upon the lower limbs and breasts of women. (Cf. Erysipelas Perstans.)

The treatment of these cases is by frequent shampoos and embrocations, to stimulate the absorbents, aided by elastic compression. Facial deformities of this class are always benefited by abstinence from the use of tobacco and alcoholic stimulants, the diet at the same time being carefully regulated. The nasal cavity, the region of the orbit, and the mouth (caries of the teeth, etc.) should always be examined with a view to the removal of the cause.

DERMATITIS.

(*Ger.*, HAUTENTZÜNDUNG; *Fr.*, DERMATITE.)

Inflammation of the skin occurs in a large number of cutaneous affections. Under dermatitis, however, are grouped those inflammations only in which the result is plainly due to a direct influence exerted upon the skin by thermal, chemical, or mechanical agencies. The inflammatory process may involve the superficial or the deep portion of the integument, or it may extend to the subcutaneous tissues, or even deeper. The symptoms vary with the nature of the cause, the extent and degree of its influence, and the circumstances attending its operation. There may be simple hyperæmia and œdema of a few hours' duration, or there may follow papules, vesicles, bullæ, pustules, and crusts. These lesions may be situated on an intensely reddened and much swollen base. In severe cases ulceration, gangrene, and extensive scarring may occur. With these phenomena there may be general symptoms of mild or of severe grade, due to the influence exerted by the local process upon the general economy. When the exciting cause is of moderate intensity but is long continued there results a chronic dermatitis in which the skin may be more or less thickened and infiltrated, dull red in color, and covered with fine adherent scales.

DERMATITIS TRAUMATICA.

External violence, varying in character and severity, is capable of inducing dermatitis, the symptoms of which differ in degree, though their career is, in general, the same. In this list are included the inflammations produced by surgical interference with the continuity of the integument; excoriations caused by scratching, by friction with garments and other articles injuriously acting upon the skin; by the various implements handled in the trades; and by the bites or the stings of beasts, insects, reptiles, and fishes, when the result is traumatic and not toxic in character. These injuries may be in the form of contusion, blow, concussion, pressure, puncture, incision, or laceration, and the consequences are declared in heat, swelling, redness,

and pain ; in itching, burning, stinging, or pricking sensations ; with subsequent inflammatory symptoms varying in grade from mild and transitory hyperæmia and exudation to the severer grades of inflammation mentioned in the preceding paragraph.

DERMATITIS VENENATA.

Certain medicinal and other substances applied to the external surface of the skin are capable of exciting inflammation by operating either as caustic, irritant, toxic, or even traumatic agents.

Symptoms.—Careful observation of a typical case of dermatitis venenata soon after the onset of symptoms will disclose the exact surface of contact, such surface being delicately outlined by a reddened, tolerably well-defined line, within the limitation of which will be seen a slightly tumefied, erythematous area, at times displaying closely packed, pin-point-sized papules, vesicles, or pustules. As the dermatitis progresses it is not necessarily limited to the surface with which the irritant has come in contact. The inflammation may extend to adjacent portions of the skin, or, as a result of absorption and consequent toxic effects or of reflex nervous irritation, it may appear on distant surfaces of the body. Numerous types of cutaneous lesions—macules, pustules, papules, vesicles, bullæ, wheals, scales, crusts, free serous and purulent discharges, subcutaneous abscesses, and even gangrene with sloughing—may occur, the result being largely proportioned to the character of the agent producing the injury and to the susceptibility of the individual.

Etiology.—Among the sources of dermatitis venenata may be named most of the strong acids and alkalies, croton-oil, cantharides, mustard, tartar emetic, mezereon, the compounds of mercury, arnica, turpentine, ether, chloroform, tarry compounds, resorcin ; many of the dyes, several members of the rhus family (*Rhus toxicodendron*, poison-ivy, and *Rhus venenata*, poison-sumach), the nettle, the smartweed (*Polygonum punctatum*), cowhage (*Mucuna pruriens*), and glass in fine powder or in delicate filaments, such as are thrust into the skin when handling certain articles of Venetian glassware. This list might indefinitely be extended, as there are few articles which are not capable of producing some irritation of the surface of the skin if applied to it with sufficient vigor and for a certain period of time ; and in some cases it is difficult to decide whether the effect is more traumatic than toxic. An almost equally long list of substances of animal origin might be named having poisonous effects upon the integument, such as decomposed or ammoniacal urine, feces, ichorous pus, and pathologically altered secretions from the uterus, the eye, ear, nose, etc.

A few of the more common causes of dermatitis are : the use of soap containing an excess of alkali or even minute particles of bone for laundry, toilet, or other domestic purposes, as also several of the proprietary articles sold in the shops for similar employment. Stockings and other undergarments dyed with anilin, picric acid, chromium, or arsenic ; the leather lining of the inside of the hat or the cap, and the painted toys to which the lips of children are applied, will beget mischief in the various regions of contact for each. Duhring

reports cases in which the dyestuff in the lining of shoes penetrated the material of stockings in women, and produced dermatitis of the feet or the legs.

The tincture of arnica, an article much used as a domestic application for contused and incised wounds of a simple character, has produced very serious annoyance in some cases, two such having been recently presented at the authors' clinic. The number of these accidents is annually increasing. Cartier¹ reports excessive erysipelatous swelling, a phlyctenular eruption, and submaxillary adenopathy resulting from the external use of arnica. Beauvais reported to the Paris Medical Society gangrenous results in one case. Buchner believes this poisonous action to be due to insects (particularly the *Atherix maculatus*) found in the calyx of the arnica-flower. Other native plants, a large number of which are enumerated in a valuable monograph by White,² presented in 1886 before the American Dermatological Association, are similarly effective. Wesener³ reports that the Malacca bean-tree (*Anacardium orientale*) furnishes a caustic oil, called "cardol," or "cardoleum pruriens," that produces, after application to the skin, vesicles and vesico-pustules which contain cardol and terminate by crusting. He reports a generalized eruption, beginning on the face, due to this cause.

The antiseptic dressings of modern surgery are at times responsible for eruptive troubles. Among these antiseptics may be named iodoform, which has produced erythema, vesicles, pustules, and wheals.⁴ Carbolic-acid and corrosive-sublimate dressings have had similar effects. Many of the articles employed therapeutically by the dermatologist should be placed in the same category. Green,⁵ of London, reports œdema of the skin followed by desquamation, resulting from the application to it of the ointment of ammoniated mercury in the strength of 2 drachms (8.) to the ounce (32.).

Leszinsky reports a case of dermatitis of the face following the use of a "triple extract of heliotrope" as a toilet-preparation.

An exceedingly common source of dermatitis is urine retained upon underclothing of adults. A persistent dermatitis of the scrotum, the perineum, or the inner faces of the thighs in either sex, always calls for examination as to whether a few drops of urine are not left in contact with such underclothing after each act of micturition. Fistulæ, urinary incontinence, prostatic disease, "stammering of the bladder," imperfect finish of the *coup de piston* in men, especially after a gonorrhœa and similar troubles, are all to be remembered.

The eruption produced by the POISON-IVY and other varieties of rhus is almost exclusively an American disease; and from its frequency in the United States has attracted a great deal of attention. A certain degree of susceptibility to the poisonous action of the plant is requisite for the production of its effects, as some individuals can handle the leaves of the plant with impunity, while others, it is claimed, are

¹ Lyon Méd., April 13, 1884.

² Dermatitis Venenata. Boston, 1887.

³ Deutsche Arch. f. klin. Med., vol. xxxvi., p. 578.

⁴ See paper of R. W. Taylor, read before the New York Academy of Medicine, 1887.

⁵ Brit. Med. Jour., May 3, 1884.

affected by its exhalations within a circle having a radius of several feet. It is, however, difficult to demonstrate the truth of the last statement, suspecting, as one may, that such instances may be cases of contact with other than the suspected plant. The parts commonly affected are the hands and the regions to which the latter are carried, such as the face, the genitals, the arms, the thighs, and the neck; barefoot children suffer in the feet and the legs. Usually the symptoms are developed in the course of a few hours, and they consist of erythematous patches; scanty or profuse vesiculation with abundant serous weeping after rupture of the lesions; swelling, œdema, and disfigurement; and intense burning and itching sensations. Serious effects are occasionally produced. Deeply attached scars may result from subcutaneous abscesses of parts greatly swollen. Occasionally in particularly sensitive skins the eruption spreads from the skin-surface affected by the poison to that where presumably none has been applied. It should be remembered, however, that articles of clothing may for brief periods of time furnish sources of further trouble, being worn at the moment of contact with the plant, then laid aside, and, the occasion quite forgotten, being subsequently employed. Thus, a pair of undressed-kid gloves after lying for two weeks untouched have sufficed to awaken the disease.

A number of cases of dermatitis have originated in some parts of the Orient from contact with the varnish employed in the finishing of lacquered ware. This lacquer is manufactured from a rhus varnish. A few instances of such dermatitis have occurred in America from handling newly imported articles of this class.

Diagnosis.—An acute dermatitis appearing suddenly on regions of the body readily exposed to toxic agents should always arouse suspicion of dermatitis venenata. A history of contact with some irritating substance can usually be obtained. The inflammation in the beginning is limited to the areas with which the toxic agent came in contact, is often asymmetrical, and has no relation to the general health of the patient. The process often reaches the point of greatest intensity within a day or two after its first manifestations, and subsides soon after removal of the cause.

The peculiar features of ivy-poisoning have been described in a monograph on the subject by White, of Boston.¹ According to this author, the lateral surfaces of the digits first exhibit the symptoms of the eruption, later the dorsal surfaces, and latest the thickened palms. The efflorescence also is more irregularly distributed, more uniformly vesicular, and the vesicles are less transparent than in eczema. The lesions, moreover, are more vesicular and less papular at the outset, and, though suggesting papules by their situation in the palm, are in that situation readily made to exude serum by puncture with a needle.

Treatment.—Internal medication is not required. The local treatment is that of acute eczema. Black wash (preferably dilute), solution of sugar of lead, or oleated lime-water may be employed at first, and be followed later by dusting-powders.

¹ New York: D. Appleton & Co., 1878, from the March number of N. Y. Med. Jour. of the same year.

In ivy-poisoning the application of an alkali, for the purpose of neutralizing the poisonous volatile alkaloid in the leaves of the plant (toxicodendric acid, Maisch), should evidently be considered solely with a view to prophylaxis, as it is difficult to understand how such neutralization can control the inflammatory process after its onset. The late Prof. Babcock, of Chicago, a frequent sufferer from this disease following his extended botanical excursions, first made known the value of an ointment made by incorporating a decoction of the inner bark of the American spice-bush (*Benzoin odoriferum*) with cold-cream salve. It affords prompt relief in cases in which it is employed, the difficulty lying in securing the bark of the shrub in its young and tender state.

Many topical remedies have been vaunted as specifics for the relief of this disorder, from the brine of a pork-barrel to a decoction of the leaves of the plant itself. As the eruption usually subsides when the skin is protected and not irritated by the local treatment, it is not difficult to explain the result in most cases, though it is possible there is a parasitic element in the poison. Corrosive-sublimate lotions; saturated solution of boric acid; Carron oil; 50 per cent. solution of ichthyol; tincture of iron; bromine, 15 drops (1.) to the ounce (30.) of olive-oil (Brown); dilute nitric acid; sodium hyposulphite; sodium bicarbonate; saturated solution of potassium chlorate; and grindelia robusta, 1 drachm (4.) of the fluid extract to 8 ounces (250.) of water, have each been found useful. Complete covering of the affected area with flexible collodion is frequently effective.

DERMATITIS CALORICA.

Under this title are included those affections of the skin induced by extremes of thermal variation.

Unduly high temperatures produce in the skin redness in varying shades and a slight degree of swelling, the color not completely disappearing under pressure. If the exciting agent be withdrawn before further effects are induced, the color first deepens, then becomes paler, and in twenty-four hours the process is usually concluded with a very delicate and transitory resulting pigmentation.

Rays of heat and heated objects at a temperature from 125° to 175° F. produce immediately, or after a brief interval, first, an erythema, which disappears when the source of the heat is removed; second, after more prolonged exposure, the symptoms of active inflammation and exudation. Vesicles or bullæ, isolated or confluent according to the severity of the cause, may rise from a reddened skin which is usually intensely painful. These lesions are persistent or are transitory, and are generally filled with a clear serum, which exudes and dries into crusts after rupture of the chamber in which it was imprisoned. At other times the exudation is so abundant that the epidermis rises in broad plates, from beneath which the serum is exuded. This process may terminate by a free production of pus upon the surface and gradual resolution. Adenopathy is a frequent concomitant symptom. In such dermatitis of extensive areas of the skin the

intensity of the process may awaken a violent fever, or death may result from shock or exhaustion.

In yet severer grades there is the production of an eschar, which is dry, brown, blackish, and destitute of all signs of vitality; or, as Kaposi describes it, is dense, coriaceous, and white as alabaster, though upon the eschar some vesicles appear, and by their presence suggest a false conclusion as to the vitality of the tissues upon which they rest. In from eight to ten days the slough is removed by suppurative processes, and the scene is closed by the usual phenomena of granulation and cicatrization. The characteristics of the scar thus produced are: its great irregularity, its tendency to stellate radiation, and the production of ridges, folds, pockets, and bridges.

Burns involving one-third the body-surface are of grave portent, and those affecting one-half the body are generally fatal, even though for from twenty-four to forty-eight hours there may be little complaint of pain. The causes of death in these fatal cases are generally obscure, as the post-mortem results are usually negative. Gastric and duodenal ulceration, however, is often recognized. Overheating of the blood, heart-paralysis, oligocythæmia, and actual destruction of leucocytes have all been supposed to be effective in bringing about dissolution. In cases in which life is prolonged to the third day the complications of pyæmia, erysipelas, and tetanus may arise. Lastly, exhaustion following fever, suppuration, hemorrhage, and visceral affections may lead to fatal results.

Treatment.—In the treatment of the simplest burns, rest, lotions of lead-water, and cool water, with the application of compresses, are usually sufficient to secure relief; occasionally, dusting-powders may advantageously be substituted. In the cases in which serum is brought rapidly to the surface, with the production of vesicles and bullæ, the latter should be punctured skilfully to give relief to the tension by the evacuation of their contents, but the roof-wall should be preserved, as it may subsequently form an attachment to the exposed derma beneath. The indications then are to exclude the air as perfectly as possible and to prevent suppuration, indications which are admirably met by the application of carbolated oil and lime-water with the Lister dressing. Continuous immersion in water having the temperature most agreeable to the patient, as practised by Hebra in cases of severe and extensive burning, produces a speedy and certain amelioration of the pain and a favorable condition of the wounds, though it does not avert a fatal issue in any dangerous case.

The strictest antiseptic precautions are demanded when the suppurative process in the skin is both active and extensive. Disinfection with a 5 per cent. solution of carbolic acid, or a 2 per cent. resorcin solution, should be followed by the application of protective silk wet with a 5 per cent. solution of sodic biborate or bicarbonate, and the whole enveloped either in borax-lint, antiseptic (mercuric iodide) wool, carbolized gauze, or salicylated cotton; over all, impermeable rubber tissue should be wrapped.

Nitzsche¹ first disinfects the burnt surface thoroughly with carbolic

¹ Deutsche med. Zeit., 1881.

acid, having previously protected the blebs, after which it is covered with a thick varnish of linseed-oil and litharge mixed by the aid of heat with 5 per cent. of salicylic acid. When this coat is dry a second coat is applied, and the whole is finally covered with a thick layer of wadding retained in place by an elastic bandage exercising moderate compression. Cicatrization progresses beneath the dressing without changing the latter. When suppuration occurs the upper layer of wadding is removed, and dried salicylic acid in powder is sprinkled over the surface, the wadding being afterward reapplied.

Skin-grafting may be required to cover the extensive ulcers left by the larger burns.

CONGELATIO, or dermatitis from congelation, presents usually in the milder forms circumscribed erythematous patches or plaques, generally recognized under the name of *PERNIO*, or chilblain, seated upon the digits or, more rarely, upon the face, and occasioning a disagreeable sensation of heat, smarting, or itching, especially after the chilled part has been warmed.¹ Chilblains are bluish or purplish red in color, and are often seated on a slightly œdematous integument. They are generally cool to the touch when subjectively hot. Authors have claimed that anæmia is a chief predisposing cause of the complaint, but it frequently occurs in perfectly healthy young people. Sir Erasmus Wilson has suggested that some cases of so-called "lupus erythematosus" of the hands belong to this category.

In the second grade of inflammatory reaction, following the state of contracted blood-vessels and pallid integument produced immediately by the action of cold, bullæ and vesicles form, with underlying ulcers in severe cases.

In the third grade gangrene may occur, with and without the formation of bullæ. The frozen part may become insensitive, white, and cold, without the circulation in it of blood- and lymph-currents. From this condition reaction occurs, with the formation of an eschar, differing after the death of the patient according to the severity of exposure to cold. If, however, beside the interference with the circulation, the tissue itself has been destroyed, when reaction occurs the part falls at once into gangrene; or there form bullæ larger than those described above, filled with sanguinolent serum; or the skin is smooth, marbled with bluish lines, whitish, cold, and insensitive. Mortification ensues, followed by the well-known phenomena of the "line of demarcation," and, in favorable issues, suppurative separation of the dead part, granulation, repair, and cicatrization. As the injuries induced by congelation are more frequent upon the extremities, the bones, especially those of the digits, largely participate in the losses of tissue. Septicæmia and a fatal result may follow.

Chilblains are treated internally by the ferruginous tonics, particularly the tincture of iron, externally by stimulant applications, such as those containing iodine, camphor, carbolic acid, tincture of benzoin, and balsam of Peru. Kaposi recommends:

¹ Consult the chapter devoted to the Erythemata.

R	Pulv. camphoræ,	gr. x;	66
	Cretæ præparat.,	ʒj;	30
	Ol. lini,	f ʒij;	60
	Balsam. Peruvian.,	℥ xx;	1 33 M.

Frictions, with or without medication, are generally useful. The parts are to be carefully protected from pressure and undue friction-effects.

Dilute nitric acid and peppermint-water in equal proportions, painted over the part for three or four successive days, have been recommended by Lapatin for the treatment of frost-bitten fingers and toes. Hydrochloric and pyroligneous acids, lemon-juice, 50 per cent. and stronger solutions of ichthyol, collodion, and lead acetate, both in lotions and poultices, are also recommended. Meurisse advises in the management of both severe ambustio and congelatio that goldbeaters' skin be employed over any salves or lotions applied to the affected surface.

In cases of severe congelation the circulation is to be cautiously restored by friction performed in an apartment the air of which is cool, to prevent too energetic reaction. Friction with snow is employed with safety in America and on the steppes of Russia, where these accidents are frequent and are grave in results. Perseverance for hours in this course is often rewarded with success in apparently desperate cases. Antiseptic dressings are usually demanded when sloughing and ulceration ensue.

DERMATITIS MEDICAMENTOSA.

The importance of recognizing the fact that a given eruption is produced by an ingested drug can scarcely be overestimated from the point of view of the diagnostician. The errors committed in this connection are so frequent and so annoying to the patient that it is necessary for the physician to inquire very carefully, before treating any cutaneous disease, as to the medicaments previously swallowed by the patient, and also to be prompt to connect any aggravation of a cutaneous disease with remedies ordered by himself for internal use. The following is but an imperfect list of the drugs the internal administration of which may be followed by an exanthem—imperfect, because without question many have yet to be recognized as possessing such an action. As to the *modus operandi* of such medicinal agents, for the most part our knowledge on this subject is purely conjectural. Some, for example potassium iodide, are eliminated in part by the glands of the skin, and presumably have thus a local effect upon such emunctories; others, and in this class, probably, should be included quinine, induce an urticaria scarcely to be distinguished from an *urticaria ab ingestis*. Some operate, possibly, in either or both ways at different times or in different individuals. The absurdity of supposing that any disease can be “driven out” by the ingestion of such drugs should be relegated to the specious ignorance which first framed such an hypothesis.¹

¹ For full details of this subject, consult the treatise on Drug-eruptions, by Prince A. Morrow. New York, 1887.

Acids.—The acids capable of producing macules, papules, erythema, desquamation, etc., are carbolic, nitric, tannic, benzoic (and sodium benzoate), and boric (and sodium borate).

Modadewkow reports a case in which the pleura was washed out with a 5 per cent. solution of boric acid, a part of which was not removed. There occurred as a result an erythematous rash over the face, the trunk, and the extremities.

Aconite.—This drug is said to be productive at certain times of marked diaphoresis with the occurrence of vesiculation and considerable itching. The diaphoresis in an irritable skin may be responsible for the trouble.

Antipyrin and Other Remedies of its Class (manufactured by the action of glacial acetic acid upon the petroleum-products).—Ernst¹ has been followed by many observers in recording rashes resulting from the administration of antipyrin. The symptoms are discrete and confluent patches of bright-red, scarlatiniform, erythematous, and pruritic macules or papules. Veiel² reports œdema with bullæ upon the lips and toes, and over the palate, with urticarial lesions of the palms and soles, after ingestion of antipyrin. Brocq, Darier, and others have reported cases in which antipyrin has produced a more or less persistent erythema in the form of isolated, scattered, sharply defined plaques. These plaques are usually few in number, and they tend to return in the same sites whenever the susceptible individual ingests the drug. The redness and pigmentation may persist for several weeks. Wickham reports an antipyrin-rash which simulated perfectly a macular syphiloderm.

Arsenic.—Erythematous, vesicular, papular, and much more rarely pustular, bullous, and ulcerative lesions occur upon the face, the back, and the hands after the ingestion of arsenic. The well-known effects of the administration of the drug in toxic doses upon the mucous membranes of the eyes, nose, and mouth need not be described in this connection, nor yet the grave gangrenous symptoms, with osseous necrosis, that have been observed in workers in the metal.

A bright-red, scarlatiniform blush with a few isolated vesicles has covered both shoulders of a young woman with a delicate skin after taking three medicinal doses of Fowler's solution, the eruption being present but less distinct upon her face and hands. In two cases the rash in polymorphic type was limited to the hands alone.

Young patients who have taken arsenic in the largest medicinal doses for relief of chorea often present as a result a dark discoloration chiefly of the skin of the chest and the neck, but also of other parts of the body. This discoloration is suggestive of the bronzing seen in Addison's disease. In some instances there are no other cutaneous symptoms. Guaita and Liège noted these phenomena usually in the fifth month after ingestion of the drug.

Long-continued use of arsenic may produce keratosis of the palms and soles of a severe grade, obstinate character, and occasionally grave

¹ *Centralb. f. klin. Med.*, 1885.

² *Arch. f. Derm. u. Syph.*, 1891, Hft. 1.

results. Administered for relief of psoriasis, the resulting keratoses have later developed into epitheliomata of malignant type.

By far the largest number of rashes are, however, produced in persons previously suffering from the cutaneous disease for the relief of which the drug is administered. Here the toxic effect is declared by either—first, increased hyperæmia of the skin, visible in an erythematous patch, or beneath the scales of a squamous patch, or as an areola of bright-red hue about any aggregation of lesions; second, by simple aggravation of the type of a disease already in existence (recurrence of acuity in a subacute eczema); third, by rapid peripheral extension of a disease which had previously been well limited in contour; fourth, by converting a disease exhibiting uniformity of lesions into one characterized by multiformity. Each of these results might be illustrated by cases.

In a series of eight cases of poisonous effects produced by arsenical paper-hangings, and reported by Brown,¹ there were, curiously, no cutaneous symptoms.

Belladonna.—The well-known erythematous, scarlatiniform, or reddish efflorescence produced by belladonna and its alkaloids is usually limited to the upper segment of the body, but it may become generalized. It is said to occur more frequently in children, probably because it has been administered largely to individuals of that age under the delusion that it is useful as a prophylactic in scarlatina. Very disagreeable and even dangerous results have followed the instillation into the eye of atropine as a mydriatic, the rash being accompanied by constitutional symptoms.

Bromine and its Compounds.—A full account of the cutaneous effects of bromine and its compounds, when administered internally, is contained in a paper on medicinal eruptions, read in 1880, by Van Harlingen, of Philadelphia, before the American Dermatological Association. Acneiform lesions, pustules, macules, maculo-papules, papules, eczemaform moist patches, furuncles, urticarial wheals, scales, and ulcers have been induced by swallowing the bromides of potassium, sodium, ammonium, and lithium. By far the commonest are the acneiform and pustular lesions, occasionally accompanied by pruritus, which appear upon the face and the upper portion of the trunk, though the rash may be very distinct upon the genital region. Duhring reports an interesting observation of a patient in whom the eruption simulated closely the maculo-papular syphiloderm, the patient having taken a bromine salt for three years. The eruption first appeared within five or six days after decreasing the dose. Kaposi observed a case of bromide-rash in a nine-months-old suckling, the mother having taken 120 grammes of potassium bromide in two months, herself exhibiting no traces of eruption.

A remarkably characteristic exanthem is produced by the administration of potassium bromide, especially to infants and young children. The lesions are condylomaform, quite numerous, conspicuous about the face and neck, where they are packed closely together, but they are also seen on other parts of the body. The small coin- to nut-

¹ Paper read before the Boston Society for Medical Observation, March 6, 1876.

sized elevated nodules are usually flattened; and they often resemble carbuncles, as they have a cribriform summit on which multiple points of imprisoned pus are visible. This rash, though rare, has been carefully studied and well illustrated by chromo-lithographic reproductions.

T. C. Fox and Gibbes report these condylomaform nodules in the case of an infant in which the histology of the lesions was carefully studied; and Fay in a child eleven months old also recognized an exanthem which had been mistaken for molluscum epitheliale. These lesions are somewhat similar to the condylomaform rash seen in children after the administration of potassium iodide.

Browse, of Cambridge, England, recommends for relief of these symptoms the application of a solution of salicylic acid, 1 grain to the ounce (0.066–30.) of water, frequently applied on lint, he having successfully treated in this way sores as large as the palm of the hand.

Cannabis Indica.—The only instance reported of an eruption produced by the ingestion of this drug was observed by one of us in the case of an adult male, who was extensively covered with papulo-vesicular lesions after swallowing 1 grain (0.066) of the extract.¹

Chloral.—An erythematous rash is the commonest of the eruptions produced by chloral, though wheals, red and yellowish papules, vesicles, pustules, and petechial blotches have been observed. The rash occurs upon the face, the neck, the trunk, and the limbs, of the latter especially on the extensor surfaces. In a man of advanced years and totally deaf, who had slept only under the influence of chloral for four years, discrete scaly patches as large as saucers covered the hands and the lower extremities.

Martinet² reports an erythematous and scarlatiniform rash, occasionally commingled with urticarial and purpuric lesions, occurring upon the face and neck, the front of the chest, the extensor surfaces of the larger joints, and the dorsum of the hands and feet. There was no pyrexia nor indisposition, but in some cases there were dyspnoea and cardiac palpitation.

Cod-liver Oil.—According to Farquharson,³ cod-liver oil after being swallowed is capable of producing an acne. This result is traceable to the use of inferior qualities of the oil.

Copaiba and Cubebs.—The ingestion of copaiba is occasionally followed by a vividly red rash, in the form of discrete macules, more rarely maculo-papules, invading chiefly the lower segments of the extremities and the skin of the belly, but often completely covering the body-surface. The rash may occur in dark mulberry-red petechiæ, and is always accompanied by pruritus. Inasmuch as the drug is often administered for the relief of a venereal disorder not syphilitic, care should be taken not to confound the eruption it may excite with the early macular syphiloderm. Cubebs is much more rarely followed by a similar result.

Condurango.—Guntz⁴ reports the occurrence of furuncular and acnei-

¹ N. Y. Med. Record, May 11, 1878.

² Thèse de Paris, 1879.

³ Brit. Med. Jour., Feb. 22, 1879.

⁴ Vierteljahrschft. f. Derm. u. Syph., 1882.

form lesions in twenty patients out of one thousand who were taking condurango for the relief of syphilis.

Digitalis.—In Behrend's treatise on diseases of the skin¹ reference is made to cases in which macular and maculo-papular rashes succeeded the ingestion of digitalis.

Iodine and its Compounds.—Potassium iodide is responsible for the larger number of all eruptions among medicinal rashes. The frequent employment of this drug and the very marked influence it possesses over the skin render the study of these morbid results important.

FIG. 42.



Papilloma, due to the ingestion of the iodine compounds.

Unlike many of the other substances in the list of drugs, the iodine compounds are followed by some species of rash in probably the larger number of all persons who swallow them. As is true also with the bromine compounds, the eruption may persist, or even first appear, after the drug has been discontinued.

The resulting lesions may be macular, papular, vesicular, bullous, pustular, petechial, multiform, or may be circumscribed subcutaneous

¹ Braunschweig, 1879.

abscesses. In appearance the rashes produced by iodine and its compounds may simulate those of every other dermatitis.

The macular rash is best seen fully developed over the upper extremities in discrete erythematous patches or as a diffuse blush. Generally the rash is displayed symmetrically. The hands are often affected, and suggest in appearance the hands of the anilin-worker. The rash assumes at times the papular type with special production of papules upon the face.

Berenguier describes a scarlatiniform rash of sudden occurrence, with numerous minute discrete vesicles upon the surface of the skin. Eczemaform eruptions with abundant serous exudation are also reported.

A number of cases are on record in which the administration of the drug was followed by the production of bullæ. Bumstead, Taylor, Duhring, Tilbury Fox, Finny, and one of us have described such bullæ in adults as well as in children.¹ Hallopeau² also reports a fatal case in which a bullous eruption followed the ingestion of potassium iodide. The eruption occurred chiefly about the head and neck and the upper extremities. The significant rarity of vesicular and bullous lesions in acquired syphilis suggests that at least some of the cases on record were those of rashes induced by the remedy given for the relief of the disease.

A careful analysis of these bullous rashes leads to their division into three categories: first, those occurring, often with fatal results, in cachectic adult patients; second, those occurring as part of the eruptive lesions in a polymorphic group; third, those occurring in well-nourished children, and taking on the appearance of molluscum epitheliale and condyloma-lesions, usually compounded of papulo-vesicles and pustules. Erythanthemata of a similar type have also been recognized after the ingestion of potassium bromide by infants.

The pustules induced by the administration of iodine compounds are seen chiefly upon the face, the neck, the trunk, and the arms. They are usually seated upon a firm base, and may be followed by cicatrices. Duhring has seen an annular patch upon the forehead, made up of minute vesico-pustules, which eventually developed into a globular violaceous mass nearly two inches in diameter. Large, cherry-sized, tubercular or papillomatous elevations abruptly rising from the surface of the integument may present a cribriform structure, which shows the open ducts of several suppurating follicles (chin, cheek, nose). A few cases are reported in which fungating tumors were found, producing an appearance almost identical with that of mycosis fungoides. Neumann³ calls attention to the fact that these severe forms of iodide-eruption occur in patients suffering from albuminuria.

The purpuric rash occurs in petechial macules, discrete and miliary, situated chiefly on the lower extremities. In a case reported by Mackenzie (quoted by Van Harlingen) a dose of $2\frac{1}{2}$ grains (0.166) taken by an infant was followed by a fatal result after petechiæ appeared.

Jaborandi and **Pilocarpine** are capable, when ingested, of inducing

¹ Arch. of Derm., October, 1870. Jour. Cutan. and Ven. Dis., 1886, p. 383.

² Union Méd., March 25, 1882.

³ Arch. f. Derm. u. Syph., 1899, vol. xlviii., No. 3.

free diaphoresis; erythematous macules, wheals, and pinhead-sized papules have been seen upon the surface as a result.

Mercury.—Mercury when ingested is reported to have produced an erythematous rash upon the surface of the skin. In view of the fact that the metal has been, in its various compounds, administered for so long a period of time and for so many various diseases, without the production of cutaneous symptoms, it is a fair hypothesis that in the few reported cases there was coincidence rather than causation. Mercurials when applied to the external surface of the body are, as is well known, capable of exciting, in various degrees, cutaneous irritation and inflammation.

Opium and its Alkaloids.—Erythema, wheals, and occasionally intense pruritus, with œdema, and subsequent desquamation, have followed the ingestion of opium and several of its alkaloids, notably morphine. In its mildest expression this cutaneous effect is limited to a characteristic itching about the nostrils that can be perceived in a large proportion of all patients as soon as the general effect of the opiate becomes apparent. In some patients there may follow an intense and distressing general pruritus without efflorescence, and it is certain that the subsequent urticarial efflorescence is caused by the free diaphoresis which the medicament induces. This fact is a matter of practical moment, as the use of an anodyne for the purpose of procuring sleep for a patient tormented with a nocturnal pruritus would seem to be occasionally indicated. Inasmuch as chloral, potassium bromide, and the opiates are all capable of aggravating such distress, great caution is needful in such emergencies. In general, it may be said that the employment of these and similar remedies for the relief of pruritus should be interpreted as a confession of weakness on the part of the physician, who ought to be able to alleviate the distress of his patient by a judicious employment of topical remedies.

Petroleum and its products are responsible for a large list of medicamentous rashes (see Antipyrin, etc.).

Phosphorus.—Hasse (quoted by Van Harlingen) cites the case of a young girl who exhibited a pemphigoid rash after the ingestion of phosphoric acid. According to Farquharson,¹ phosphorus itself is occasionally responsible for purpura with gastro-intestinal derangement and jaundice preceding a fatal issue.

Podophyllin.—Winterburn² reports that those who work in resinoid podophyllin are liable to suffer, as a consequence of this exposure, from a cutaneous disease of the scrotum.

Potassium Chlorate.—Stelwagon and others report that papules and macules have followed the use of this remedy, administered in the form of tablets.

Quinine, Cinchona, and Cinchona Alkaloids.—Morrow³ collected the records of over sixty cases of quinine-exanthem, and he shows that its prevailing type is exanthematous, the rash being of a vivid hue, disappearing on pressure, and resembling scarlatina. Other

¹ Loc. cit.

² Louisville Med. News, April 21, 1882.

³ N. Y. Med. Jour., March, 1880, p. 244.

lesions produced are wheals, papules, vesicles, petechiæ, hemorrhagic purpura, bullæ, and in one instance an intense localized dermatitis with beginning gangrene of the scrotum. In some of the cases the rash appears on repetition of the dose, and even after recourse to other alkaloids. The subjects are mostly women. As with most of the other exanthem-producing drugs, small doses suffice for the effect where the idiosyncrasy exists. The rash has been studied in an adult male, who, after taking 2 grains (0.133) of quinine sulphate for the first time in six years, exhibited an efflorescence (over the entire surface of the body) of discrete, finger-nail-sized, salmon- and pinkish-tinted, scarcely elevated patches, accompanied by moderate pruritus. A repetition of the dose was followed by a recurrence of the exanthem.

In several cases desquamation is reported as resulting from the rash. As to the occurrence of the general symptoms recognized under the title "cinchonism" (tinnitus aurium, etc.), these may and may not accompany the lesions. Morrow makes the pertinent suggestion, in view of the frequent similarity of the rash to that exhibited in scarlatina, that many cases hitherto recorded as recurrent attacks of that disease and measles, with other anomalous cutaneous eruptions, may have been instances of quinine-exanthem.

Salicylic Acid and the Salicylates.—Reports of cases in which these substances after ingestion produced cutaneous symptoms have been made by Heinlein, Wheeler, and Freudenberg, all cited by Van Harlingen. The symptoms were diffused redness, urticarial lesions, vesicles, pustules, petechiæ, and vibices, accompanied by intense pruritus and followed by desquamation. Engman¹ reports an interesting case, including the histology of the lesions.

Salipyrin.—Oedema of the skin and actual loss of tissue have resulted from the administration of gramme doses of salipyrin to a man aged fifty-four years (Schmey).

Santonin.—A generalized eruption of urticarial lesions seated upon a reddened surface and accompanied by oedema is reported by Sieveking as occurring in a child to whom santonin had been administered as a vermifuge.²

Sodium Benzoate.—Rohé³ reports two cases in which an erythematous rash, with well-defined border, accompanied by itching and slight desquamation, occurred during the use of sodium benzoate. The patients were a woman, aged thirty-five years, and a boy suffering from diphtheria. The eruption disappeared on discontinuance of the remedy, and was made successively to appear and disappear by its alternate use and disuse.

Sodium Biborate.—Gowers⁴ reports the occurrence, especially on the arms, but also over the trunk and legs, of an eruption resembling psoriasis, after the ingestion of sodium biborate. Some of the resulting patches were one and a half inches in diameter. Three cases

¹ Jour. Cutan. and Gen.-Urin. Dis., 1899, p. 555.

² Brit. Med. Jour., February 18, 1871.

³ Maryland Med. Jour., June 15 1881, p. 91.

⁴ Lancet, September 24, 1881.

in all are collated. In two the eruption faded when a solution of arsenic was added to the sodium salt.

Stramonium.—Deschamps (cited by Duhring) reports an erythematous rash after the administration of the thorn-apple.

Strychnine.—Skinner (cited by Van Harlingen) reports a case in which an eruption of six weeks' duration ensued upon the administration of quinine and strychnine together; the former in the dose of $1\frac{1}{2}$ grains (0.10), the latter in the dose of $\frac{1}{24}$ grain (0.0025).

Tanacetum.—A case of varioliform eruption produced by the ingestion of $1\frac{1}{2}$ drachms (6.) of the oil of tansy, administered for abortifacient purposes, is reported by Potter.¹ There were antecedent clonic convulsions. The result was not fatal.

Tar and Turpentine.—Erythematous, vesicular, and papular rashes are reported as resulting from the ingestion of these substances.

The following medicaments may be added to the list of drugs capable of producing rashes when administered by the mouth:

Anacardium, alcohol, bitter almonds, antimony, argenti nitras, benzol, chinolin, bitter-sweet, capsicum, cantharides, chloroform (after administration for anæsthetic purposes), duboisin, ergot, ferrous iodide, guarana, kava-kava, creosote, resin, castor-oil, ipecacuanha, hyoscyamus, lactophenin, matico, lead and its compounds, sulphur and calcium sulphide, veratrum viride, cocaine, conium, pimpinella, rhubarb, sulphonal, tuberculin, and valerian.

Many of these drugs have been effective in but few instances. There is no reason why the list should not be in the future greatly enlarged, as it is probable that every medicament is capable of producing a temporary efflorescence when the system exhibits a special sensitiveness to its action.

The **Diagnosis** of the various medicinal rashes described above does not, fortunately, demand a recognition of the essential peculiarities impressed upon each by the exciting cause, since in many cases such peculiarities do not exist. The same drug may, on the one hand, produce a rash with symptoms widely differing in a group of patients, while, on the other hand, the urticariæ resulting from the ingestion of "head-cheese," quinine, and chloral may be indistinguishable. But to establish the fact that a medicamentous eruption is present in any given case is a long step in the direction of reaching the precise cause that has been in that case effective. This information must often be obtained from the lips of the patient. The medicinal rashes are in general remarkable for their sudden appearance, their symmetry, their diffusion over large areas of integument, the presence of pruritus, the absence of fever, and their existence alike upon exposed and protected surfaces of the skin, thus hinting at the action of some cause not operating externally. Excluding syphilis and the exanthematous fevers, a generalized rash of sudden occurrence should always raise the suspicion of a dermatitis medicamentosa.

¹ New England Med. Jour., October 15, 1881.

Similarly in cases of preëxisting cutaneous disease, syphilis, eczema, or psoriasis, the sudden occurrence of lesions of a new type widely diffused, or of rapid aggravation *in situ*, or of speedy extension in the area of those already in existence, should awaken the suspicion, if there be fever, of the exanthemata, and, without a febrile process, of the medicinal rashes. Thus, we have seen two patients with eczema exhibit rapid rise in body-temperature, and subsequently develop a generalized variolous rash; and it is a matter of common experience to examine patients on the eve of a macular syphiloderm, or even long past the eruptive stage of that disease, showing their faces, necks, and shoulders covered with an acneiform rash produced by potassium iodide. The practitioner cannot too strongly be urged to view with exceeding watchfulness the skin of a patient affected with any of the common disorders (eczema, acne, and psoriasis) when the eruption becomes anomalous as to type, distribution, or symptoms.

The medicamentous rashes, as a rule, disappear rapidly after the withdrawal of the exciting cause, and they require no further management. In some cases the soothing lotions, baths, and dusting-powders employed in the treatment of acute eczema may be required.

It should not be forgotten that the patient who exhibits these lesions is usually one who has been suffering from the real or fancied disease for relief of which the drug was taken, and that condition may require recognition and management.

In Morrow's treatise it is shown that the same drug may produce a variety of eruptive phenomena, and that the same eruptive features may result from the ingestion of different drugs. He points to what he concludes to be the neurotic origin of many of these rashes, and believes that the proof is inconclusive that they are to any considerable degree brought about by elimination, through the cutaneous glands, of the noxious element introduced with the drug. Tilden, however, calls attention to the fact that many of these eruptive phenomena are of the nature of angioneuroses, similar to Trousseau's *tache cérébrale*, requiring often increase in the irritability of the cutaneous vessels, with exudation of serum, outwandering of blood-cells, and, in case of hemorrhagic lesions, some change in the vascular walls themselves.

FEIGNED ERUPTIONS

Are usually varieties of dermatitis (erythematous, bullous, traumatic), discolorations, or ulcers produced by acids, caustics, and other chemical agents, or friction, for the purpose of exciting sympathy, extorting charity, securing hospital comforts, transportation to city life, etc. The persons employing these devices are, as a rule, criminals, hysterical young women, mendicants, soldiers, sailors, or servants seeking release from service. The extent to which hysterical women will go is well illustrated in one of the authors' cases, a young woman, who had suffered amputation of one finger and six months later asked to have the entire hand removed for a "gangrene," which disappeared under a fixed dressing, and which she afterward confessed was due to her applications of carbolic acid. The peculiarities, briefly, of these artifi-

cial eruptions are : their odd appearance, not resembling the well-known types of ordinary disease ; their sharp definition, due to limitation of the disease to the area of contact of the article employed in its production ; their occurrence on parts most accessible to the hands and the eyes of the supposed victim of the disease, being in right-handed persons most perceptible on the anterior portions of the body, particularly over the surface of the right thigh or leg, and over the left arm or shoulder ; evidence of drops where a caustic liquid has been spilled over the surface, or of angularity in outline, due, as a rule, to downward flow of a fluid from above ; and staining of the fingers or nails, or of the tissue beneath the latter, by the operator. In a suspected case the diagnosis may be made clear by covering the affected areas with a plaster or other fixed dressing, since the artificial eruption quickly disappears when the patient is prevented from making the effective applications.

Many cases of dermatitis gangrænosa and erythema gangrænosum have proved to be produced artificially by the patients themselves. Other diseases have thus been imitated. Among them may be named : sycosis, favus, alopecia, ringworm, scabies, bromidrosis, hæmatidrosis, chromidrosis, erysipelas, abscess, and syphilis.

“CHRONIC PUSTULAR DERMATITIS WITH EXTENSION IN PERIPHERAL PATCHES” has been described and figured by Hallopeau.¹ The trunk and the thighs were extensively covered with large deep-brown plaques, having definite borders, and exhibiting here and there over the integument indurated projections of the size of a thumb-nail. The elementary lesion was a vesico-pustule with a red areola, which spread centrifugally by multiplication and which eventually became covered with a crust.

DERMATITIS GANGRÆNOSA (SPHACELODERMA).

Gangrene of the skin may result from a dermatitis originally due to the action of either excessive cold or heat ; to the action of externally applied chemical agents (caustics, strong acids, alkalies, etc.) ; or to shock ; to ergot and other substances ingested ; to infectious diseases (lepra, tuberculosis, syphilis, erysipelas) ; to central nervous disease (decubitus, Raynaud's disease) ; to disorders of the blood-vessels (embol-

FIG. 43.



Feigned eruption.

¹ Int. Jour. of Rare Skin Diseases, 1890, iii. 1.

ism, thrombosis, acute and chronic endarteritis obliterans, calcareous changes in the arterial vascular tunics); to compression of vessels by ligature, by tumors, or by inflammatory products.

MULTIPLE GANGRENE OF THE SKIN is reported as complicating typhoid fever (Hahl¹) and malaria (Osler²). Hartzell³ and others report cases in which the lesions were apparently auto-inoculable, and in which bacilli and cocci were demonstrated. It is possible that many cases are due to a local infection.

Crocker describes two cases, one that of a male, the other that of a female patient, in whom, as a consequence of scarlatina or some poorly defined antecedent disorder, crops of pustules, followed by gangrenous sloughing, occurred in almost all parts of the body, one attack rapidly following another with rise of body-temperature. A pustulo-crustaceous lesion of the upper eyelids, with gangrene resulting in a small circular ulcer, is reported as occurring in two healthy children.

Fournier describes "spontaneous gangrene of the penis" following pruriginous and other papules of the part which were scratched and irritated. The gangrenous change in this condition succeeds a dull-reddish congestion of the part, including the mucous surface of the glans, followed by vesiculation, enormous tumefaction, and often by lymphangitis and erysipelas.

SPONTANEOUS GANGRENE OF THE SKIN occurs chiefly in hysterical female subjects, the affected plaques being irregular in outline and superficial or deep. After the slough has separated the plaques usually cicatrize without serious mischief resulting. Occasionally they spread as serpiginous lesions over the surface. Though doubt has been cast on these cases, in consequence of the discovery among them of feigned disease, it is certain that the malady occurs as described, without the operation of external agencies. These cases are included in those described elsewhere as Erythema gangrænosum. In making a diagnosis the feigned eruptions and their distinctive features should be kept in mind.

DIABETIC GANGRENE has been described by Kaposi as occurring on the limbs of patients affected with glycosuria. Bullæ appear, dry in the centre, and form black crusts, while new bullæ arise at the periphery, thus producing a serpiginously spreading area with vesicular border, resulting in both dry and moist gangrene of the central parts. Similar cases are described by other writers; in a few instances large portions of an extremity have been destroyed. Gangrene of fingers and toes without bullæ is reported.

DERMATITIS GANGRÆNOSA INFANTUM (Multiple Disseminated Gangrene of the Skin in Infants; Varicella Gangrænosa; Pemphigus Gangrænosus; Rupia Escharotica; Gangrenous Infantile Ecthyma).

¹ Amer. Jour. Med. Sci., 1900, 251.

² Johns Hopkins Hosp. Bull., 1900, p. 41.

³ Amer. Jour. Med. Sci., July, 1898.

—As a consequence of the exanthemata (variola, varicella, rubeola, purpura, erythema nodosum) the head, shoulders, and trunk of some children exhibit crust-covered lesions which ulcerate and finally throw off a gangrenous, split-pea- to small coin-sized, deep or shallow slough, after which repair commonly occurs. Severe losses are produced by a species of coalescence of smaller ulcers.

These gangrenous points may occur beneath some previously existing lesion or crust, or they may at the outset be spontaneous. In most cases there forms a vesicular lesion with rosy areola, that speedily bursts, leaving a blackish slough about which a circle of eliminating inflammation spreads. Thromboses result in the blood-vessels of the neighboring parts, œdema follows, and there is excited a train of reactive symptoms—fever, vomiting, diarrhœa, albuminuria, cardiac or pulmonary troubles. The patient becomes greatly emaciated. Crocker reports hemorrhagic vesicles and bullæ in grave cases.

Brocq is careful to distinguish between these grave forms of disease and those to which should be denied the appellation *dermatitis gangrænosa*. In these milder forms vesicular lesions may develop, simulating those of varicella, occurring perhaps in crops and accompanied by a mild fever. Some among them may be covered with a blackish crust, may indurate at the base, surround themselves with an angry zone of inflammation, and, especially about the trunk, the thighs, and the anogenital region, ulcerate beneath the crust. Even though these ulcers coalesce and acquire a grave aspect, the result, as a rule, is not unfavorable.

The subjects of this affection are infants and young children, from three months to several years of age. Beside the exanthemata which may precede, cases are on record as following tuberculosis, rickets, and syphilis. The process is one which, originally dependent upon the toxic effects of specific cocci, evidently requires a special soil for its effective operation.

The treatment should include support of the general system, with local antiseptics by the aid of boric-acid solutions, aristol, iodol, and the dressing of the parts which slough by the usual deodorizing agents.

The prognosis is at times grave.

SYMMETRICAL GANGRENE OF THE EXTREMITIES (LOCAL ASPHYXIA, RAYNAUD'S DISEASE).

This affection is usually first announced by the common signs of arrest of circulation in the capillaries, numbness, loss of sensibility, and color of passive congestion (local asphyxia, *digiti mortui*) in fingers and toes exposed to extremes of cold or of heat. The face, nose, ears, brows, and other regions and organs may also be involved. Eventually subjective sensations are awakened, stinging and lancinating pains, pricking and crawling sensations. The parts involved, often the second and third phalanges of the digits, first become livid, then cold, firm, and black; and gangrene of more or less of the affected tissue results, usually presenting the dry aspect. Bullæ may form along the line of demarcation. Separation of the gangrenous

portions usually takes place slowly. The entire process may require but a few days or several weeks for its completion.

Variations occur in a singular thinning of the digits, which may become indurated and slender; or they may be covered with small whitish cicatrices where a superficial slough has separated; or the parts may become cool, white like alabaster, and recover their tone without loss of tissue; the nails alone may fall; or indeed the entire process may meet with arrest in the early stage of blueness and asphyxiation of the extremities. The mild forms which terminate in recovery may recur, and the type may become with each recurrence more severe until finally gangrene results.

Etiology and Pathology.—This disease occurs equally in the two sexes and at all ages, and often in the cold weather of the winter season. There is a growing suspicion that many cases are of syphilitic origin, as the disease has followed specific infection. It has also succeeded tuberculosis, diphtheria, the exanthemata, diabetes, and hæmoglobinuria. It is apparently due to trophic disturbances, the exact nature of which has not been determined.

Treatment is by employment of the galvanic current, stimulation (as in dermatitis with congelation), and friction with stimulating alcoholic, camphorated, or oleaginous lotions. It is desirable to apply both electricity and (in some cases) dry cupping over the spinal region.

The **Prognosis** is in some cases grave; when the morbid condition is limited to a small part of the body recovery is often satisfactory.

ERYSIPELAS.

(Gr. ἐρυθρός, red; πέλλα, the skin.)

(ST. ANTHONY'S FIRE. *Ger.*, ROTHLAUF, ERYSIPEL;
Fr., ÉRYSIPELE, LA ROSE.)

Symptoms.—This disease is usually preceded by a prodromic period of malaise (lasting for twenty-four hours or less), which may be ushered in by one or several chills followed by febrile symptoms. The latter are accompanied by anorexia and often by vomiting with general depression and headache.

The eruptive symptoms are generally first displayed at a given point, from which the disease progresses. It is commonly first noticed in a nut- or egg-sized patch, the integument of which is tumid, slightly elevated, irregular in contour, distinctly circumscribed, and presents a rosy or crimson-reddish color with a peculiarly smooth and characteristic shining or glazed appearance. The sensations awakened may be those of moderate pruritus, of pain, heat, or burning. To the touch the affected part is tender, moderately firm, and perceptibly hotter than normal. The color fades under pressure to a yellowish white.

In typical cases the erysipelatous blush and swelling spread over an area which may be of the size of the palm, or may even cover the surface of an entire limb or a region of the body. In cases of moderate grade the inflammation attains a maximum of extent and

severity within a week, remains apparently unaltered for a day or more, and then begins to abate, with amelioration of all the concomitant symptoms. The fever, which often precedes the eruption, continues unabated during its progress, the temperature rising to 105° or 106° F., with nocturnal exacerbation, cephalic and lumbar pain, dryness of the tongue, gastric distress, and occasional delirium. As involution of the disorder is accomplished the redness is replaced by the brownish, bluish-red, and dirty-white shades often seen after the disappearance of erythema multiforme, the epidermis finally desquamating in various degrees according to the extent of the preceding inflammation.

In other cases, in which the exudation of serum beneath the epidermis has been rapid, the epidermis is raised in the form of vesicles, pustules, or bullæ, more often the latter, and precisely as in the severe forms of dermatitis calorica, with which erysipelas presents a certain analogy, gangrene of the skin may result in the part affected. This complication is particularly liable to follow the disorder when it attacks the seat of surgical wounds and injuries.

The febrile symptoms are, throughout, persistent and characteristic of a specific toxæmia. The body-temperature, as has been seen, may reach 105° to 107° F., with vespertine exacerbations and remissions; it may also become subnormal. If not relieved in the course of seven or eight days, complications may be expected, namely, œdema, abscess, phlegmonous inflammation, gangrene, or inflammatory accidents involving the membranes of the brain, lungs, heart, bowels, kidneys, peritoneum, or joints.

ERYSIPELAS AMBULANS is a term used to describe that form of the affection in which the erysipelatous blush, after involving a given area, spreads with greater or less rapidity to the parts in the vicinage, either by direct extension and uniform advancement in one direction of the tumid and distinctly circumscribed border, or by linear, digital, or irregular prolongations radiating from the inflammatory focus. As the blush and swelling advance in one direction there is usually a correspondingly rapid disappearance on the other. At other times the disease, while extending to a new area and abandoning the old, is relighted in the latter, and thus an irregularly involved and irregularly extending erysipelatous surface presents for weeks the varying phenomena of the disease. In yet other cases, chiefly those in which there has been a history of traumatism, a long erysipelatous linear streak or band may spread from the site of the traumatism in one direction or another, suggesting the indurated lines observed in lymphangitis. In severe cases the febrile, nervous, and other symptoms are grave, including coma, delirium, meningitis, and the signs of serious involvement of the lungs, pericardium, pleura, and bowels. Metastatic abscesses may also occur in the cutaneous and subcutaneous tissues, the joints, the peritoneal cavity, and even in the viscera. Death may result from these complications, or from shock, exhaustion, or pyæmia.

Surgical accidents aside, the face is the commonest seat of the disease, on which the disease may be first seen upon one side of the nose, a cheek, a lip, or an eyelid. It often attacks the lobe of the ear after the operation of piercing the lobule for the insertion of ear-rings in

women; thence it may extend over the whole face, inclusive of the mucous linings of the mouth and the nose, that present a dry, tumid and glazed appearance, suggestive of the symptoms displayed upon the skin. The inflammation may extend to the hairy parts, but in many cases it exhibits a species of reluctance to transgress the limits there presented. It may be noticed in cases of mild grade, in which no applications have been made to arrest a local progress, that the elevated border spreads symmetrically to within a few lines of the male beard or the hairs at the edge of the forehead, and there is arrested. In severer grades these limits are surpassed, and then, as a rule, the extension is rapid and formidable. In this way the entire head may become enormously swollen, suggesting to a casual observer that it is twice its normal size. The patient then is greatly disfigured; his scarlet lips are swollen and parted, permitting the escape of saliva; the ears, as usual when greatly enlarged, project in a marked degree from the side of the head; the eyelids are œdematous and incapable of separation; the face is disfigured by bullæ or crusts; and the mind disordered in the violence of the fever or the accesses of delirium. When recovery ensues the hairs generally fall.

All regions of the body may be invaded, such as the vaccinated arm, the leg the skin of which is involved in venous varicosities, the scrotum or the umbilicus of the infant, the genitalia of the newly delivered woman, the breast of the nursing-mother, and every surface which has been the seat of punctured, incised, contused, or poisoned wounds, or other accidents of the integument to which the germs of the disease may have had access.

CHRONIC ERYSIPELAS.—Habitually recurrent and indolent erysipelatous attacks the identity of which with the disease here described it is difficult to establish, have been noted by several authors. The diagnostician is often consulted in cases in which an erythematous eczema of the face, an acne rosacea, a symptomatic erythema, or an acute inflammatory œdema is described as chronic or recurrent "erysipelas." The lesions to which such terms are restricted by careful writers, however, are often forms of chronic dermatitis, such, for example, as occasionally follow dermatitis calorica. Instances occur in which the face, wholly or in part, is the seat of a low grade of inflammation with local heat, swelling, redness, considerable infiltration, and some tenderness, the skin being irritable and worse after exposure to a high wind or after excesses at the table. But most of such cases fail to exhibit the distinct imprint of erysipelas; they are not only chronic in course but are exceedingly indolent, often lasting for years; they are unaccompanied by fever; they are distinctly limited in all accesses of aggravation to the same part of the face; they are rarely characterized by a bullous efflorescence; many occur in the subjects of chronic alcoholism; and the specific germs of erysipelas are not present.

Etiology.—Erysipelas is caused by the streptococci of Fehleisen, which gain admission to the tissues through some lesion of the surface. The site of infection may be a surgical or other wound, or it may

be a slight scratch or an unrecognized abrasion of the skin or mucous membrane.

In the face, catarrhal and ulcerative processes involving the mucous membrane of the mouth, ears, and nose are often the cause of erysipelas, these processes occurring in a wide range of disorders from syphilis of the nasal bones to caries of the teeth. Tuberculous and other ulcers, as well as eczema and several skin-diseases, frequently furnish a means of ingress to the streptococci. Injuries of, and surgical operations upon, the scalp not conducted with antiseptic precautions, and the common piercing of the lobe of the ear in women and female children for the insertion of ear-rings, may be followed by the appearance of the disease upon the scalp, as a result of which the hair often falls. Fistules, vaccination, lesions of the tender umbilicus of the newborn infant, and railway accidents may be named as common causes of the disease in other regions.

Predisposing causes of this disease are to be sought for in cachexia, general debility, alcoholism, kidney-disease, epidemic influences, traumatism, violation of hygienic rules, and occasionally the recurrence of previous attacks. Besides these causes, it is alleged that constitutional predisposition and particular articles of diet (mussels) may be responsible for the disease.

Since the malady is invariably the result of infection due to the presence of a streptococcus, the essential cause lies in the specific germ, in the absence of which none of the predisposing causes named can be effective. It is clear, however, that the predisposing causes suggested are those in which the multiplication of such germs and their entrance to the general economy are most facilitated.

Pathological Anatomy.—Under the microscope the skin and subcutaneous tissues are seen to be infiltrated, the exudate being more serous and less rich in protoplasm than that observed in ordinary phlegmonous inflammation of the skin. The bullæ represent rapid exudation of this same serosity to the congested epidermis, and the elevation of the latter in consequence. The elements of the rete and connective tissue are for the same reason swollen, the lymphatic and blood-vessels are enlarged, and the cutaneous follicles are engorged, the root-sheaths of the hairs being occasionally separated, thus necessitating temporary loss of the pilary growth. In proportion to the severity of the exudative process pus-corpuscles may appear, and represent, for the most part, degenerative changes in the subcutaneous tissues resulting in abscess. The phenomena are, in short, those of superficial or of deep-spreading dermatitis. After death the skin which has been the seat of the disease cannot be distinguished microscopically from that of another part of the body.

Unna, whose examinations were made largely in the skin of children and infants, found invariably a simultaneous invasion of both the cutis and the hypoderm in erysipelas, the former recovering far more rapidly than the latter, and rarely reaching such a grade of activity. The venous capillaries were all enormously distended, as if paralyzed by the poison present, and the collateral lymphatics with the lymph-spaces were equally dilated. All the cutaneous ves-

sels swarmed with streptococci, both in the central and the marginal zones.

Diagnosis.—Erysipelas is to be distinguished from the erythemata, from dermatitis of various grades, from eczema, and from scarlatina. As a rule, its recognition is readily effected when the presence of the fever in erysipelas is kept in view, as also the peculiar shining, swollen, and rosy-reddish to damask hue of the affected parts. The redness is never produced, as in scarlatina, by multiplicity of reddish puncta, nor is it so widely diffused as in that disease. Erysipelas may at times be accompanied by a pruritic sensation, but the patch which it affects is never by any possibility scratched. By this simple test alone one may often distinguish an erysipelas of the face from an eczema of the same region in a child. From a chronic dermatitis with thickening of the affected tissues and redness of the surface, erysipelas is to be distinguished by its tendency to spread, by its acute course, by its frequent association with bullous or vesicular lesions, and by the color, outline, and raised border of the affected patch. However, it must be understood that to these localized patches of chronic dermatitis several authors have given the name "chronic erysipelas," the difference between the views held on this point being chiefly one of titles.

Treatment.—The method of treating erysipelas by the administration of the tincture of iron internally has long been popular among American practitioners, but its efficiency is questionable. This preparation is given in full doses, from 10 to 50 drops, day and night every two to three hours, irrespective of the febrile state.

The constitutional treatment is important, but is solely symptomatic, and should be directed to lowering the temperature, to obtaining proper functional activity of all the organs of the body, and in prolonged cases to sustaining the strength of the patient. Locally, when the erysipelatous blush has a distinctly circumscribed outline, an annular zone extending for an inch or more in width upon the sound and affected skin may be either covered with tincture of iodine, or be pencilled with a crayon of argentic nitrate, or be painted with a saturated solution of the same salt. The purpose of such treatment is to limit extension of the disease. It is true that these measures will not always succeed, but it is erroneous to assert with some authors that they always fail. Certain it is that, whether effective or not in the production of the result, the advancing border of the disease will often fail to surpass the limits thus artificially described. Collodion has been employed for a similar purpose, and Darlin¹ advocated the revival of this method of treating the disorder, basing its claim on the fact that the dressing diminishes the temperature of the part thus protected, and that, by the compression excited, it interferes with septic absorption. Heppel² recommends the painting over the surface of a 10 per cent. solution of carbolic acid in alcohol, as an abortive treatment, for which Braithwaite³ substitutes a solution of tannin of the same strength.

Good results have been reached in the local treatment of erysipelas,

¹ Bull. gén. de Thér., 1881, vol. ii., p. 239.

² Arch. of Derm., April, 1881.

³ Brit. Med. Jour., April, 1881.

first, by attempting to limit the extension of the disease by the application of the tincture of iodine over the peripheral zone, and, secondly, by retaining over the entire surface affected neatly applied compresses saturated with a solution of sodium hyposulphite in the strength of about 1 drachm (4.) to the ounce (32.).

Attempts, however, to limit extension of the disease by local applications of an irritating sort (corrosive sublimate, silver nitrate, carbolic acid, tar, turpentine, etc.) are by most experts condemned as positively injurious. Dry heat applied by the aid of cotton or wool, cold compresses, or iced lead-lotions with intermissions of application, salicylic acid, boric acid, iodol, resorcin in solution, or iodoform in powder may be used. A 95 per cent. alcohol or a saturated solution of boric acid often gives good results if painted frequently over and for an inch or more beyond the affected area, or if applied on compresses.

Koch applies 1 part of creolin, 4 of iodoform, and 10 of lanolin, covered with gutta-percha. Nussbaum uses ichthyol and collodion, or equal parts of ichthyol and vaselin covered with a 10 per cent. salicylic lint. Hallopeau praises 1 part to 20 of sodic salicylate in aqueous lotions upon folds of linen. Elliott and others strongly recommend ichthyol in lotions, in oils, or in ointments. It may be used in strength varying from 10 to 50 per cent., and is kept constantly applied to the affected area and for some distance beyond it. Tabit claims to abort the disease with a 10 per cent. solution of iodol in collodion. Injections of antistreptococcic serum have been used with varying success.

Erysipelas rarely attacks a patient in vigorous health. The large majority of all the subjects of the disease are either those who have previously suffered from manifest general ill-health, or who have been complaining of local ailments, trifling wounds, nasal catarrh, or surgical accidents. It is these precedent conditions which often demand special attention.

It is needless to add that all surgical indications are to be fully met when they are present: pus is to be evacuated, crusts removed, and drainage secured. The physician and surgeon alike should never forget that the disease is infectious; that the patient is to be isolated and to be supplied with an abundance of pure air; and that fomites, surgical instruments, and even the non-disinfected hands of attendants are capable of transmitting the disease.

Finally, there are forms of erysipelas which are remediless; they are usually septic in character. The scarlet blush spreading from an irreparable injury of long duration is often the last protest of Nature against the damage which even her final resort of gangrene will not avail to repair.

Prognosis.—Under favorable circumstances erysipelas, even of severe grade and extensive invasion, terminates in complete resolution. Reserve should be made, however, in every case, as a serious complication has often transformed the simplest into the gravest form of the disease. The very young, the cachectic, the victims of drink, the aged, the inmates of hospital-wards depressed by other illness, and those mentally distressed by destitution and neglect, are particularly liable to suffer from grave and fatal forms of the malady.

The patients who fill the beds in most lying-in hospitals are young women, either unmarried or deserted by their husbands, and unprovided with the necessities of life by those upon whom such a responsibility rests. The mental depression thus originating in connection with septicæmic influences is responsible for much of the relation which erysipelas often seems to sustain to the puerperal state, as also for the appalling mortality which it may exhibit under these circumstances.

ERYSIPELOID.

(ERYSIPELAS CHRONICUM, PROGRESSIVE PHLEGMON, ERYTHEMA MIGRANS.)

This term is employed by Rosenbach¹ to designate a special inflammation of the integument occurring as a complication chiefly of traumatism. When a wound is infected with the special poison of the disease a peripherally spreading tumid and empurpled halo encircles the site of infection, which slowly disappears in the part originally attacked while it extends progressively to another area. The advancing border of the disease is distinctly circumscribed, and may be festooned or scalloped. New points may appear from which the violaceous redness spreads, while others are in a state of apparent inactivity. This affection may be complicated with furunculosis, but scaling is said never to occur. Itching and burning sensations are usually present.

Rosenbach believes that the source of this disease is a micro-organism of the order Cladothrix, existing in putrid flesh and cheese, from pure cultures of which organism he is reported to have induced the disease. His position, however, is unfortified by experiments of other observers.

The disease affects chiefly the fingers and hand (according to Elliott, also the scratched toes) of scullions, meat-dressers, fish-dealers, poultry-cleaners, and persons of similar occupations. The distinction between this disorder and erysipelas is based chiefly on the indolence of the former, its more superficial involvement of the skin, and the absence of constitutional symptoms. It is to be carefully distinguished from Crocker's "dermatitis repens" (some instances of which may be here included), from erythema multiforme, from erythema iris, and from ringworm of the hands.

Treatment is efficient with local application of formalin, ichthyol, resorcin, pyoktanin-blue, pyrogallol, potassic permanganate, or the mercurials in salves or in lotions.

FURUNCULUS.

(Lat. *furunculus*, a petty knave.)

(BOILS. *Fr.*, CLOU; *Ger.*, BLUTSCHWÄRE.)

Furunculosis is characterized by the occurrence of one or more circumscribed cutaneous or subcutaneous abscesses, called "furuncles," which usually terminate by necrosis of tissue in the centre of the

¹ Verk. d. Deutsch. Cong. f. Chirurg., 1887.

phlegmon, the expulsion of the necrotic mass in the form of pus or a core, and a resulting cicatrix.

Symptoms.—Furuncles commonly begin as tender and painful indurations in the skin or its subjacent tissues, the summit of each nodule soon becoming visible in the epidermis as a reddish punctum. A furuncle is the result of an active inflammatory process, limited to a definite area, and of greatest intensity at the centre of the involved mass. This centre is often represented by a hair-follicle, the pustule that forms subsequently being perforated by a hair.

More or less rapidly thereafter these symptoms are succeeded by increased redness, heat, and tumefaction, the latter producing a nut- or egg-sized tuberosity, well projected from the surface or fairly imbedded within or beneath the derma. A yellowish point in the centre of the erythematous swelling soon announces the occurrence of suppuration. When accidentally or artificially opened at this summit exit is given to thick yellowish pus with which blood may be commingled from the traumatism of neighboring capillaries. The small abscess may then, after discharging for a few days its purulent contents, gradually close by granulation, or may also expel from its cavity a tenacious, pus-covered, yellowish-green slough, known as the "core." This evacuation is usually followed by relief of the tense and throbbing pain which is the well-known subjective characteristic of the furuncle.

The length of time requisite for the completion of this process varies with the extent of tissue involved, from a few days to several weeks. Boils may occur in any part of the body, but are most common about the face, the auricular region, the neck, the armpits, the anogenital surfaces, the hips, the buttocks, the breast, and the extremities. They may occur as single or as multiple lesions, or they may succeed each other in crops, especially about the buttocks, trunk, and thighs, for a period of several months. It is this succession of boils to which the term "furunculosis" is specially applied. The disease of the skin, in patients suffering from furunculosis, may produce a constitutional effect manifested in pyrexia, which is usually encountered only in individuals of irritable constitution when the furuncles are few and short-lived. There is also a decided chloro-anæmia due to the pain, fever, purulent drain, irritability of nervous centres, inappetence, and consequent perversion of nutrition.

The sequels of boils are maculations of a violaceous tint, often perceptible in the skin for weeks and even months after their disappearance; and pinhead- to penny-sized cicatrices which are permanent.

Etiology.—The microbe which is the immediate cause of boils is the staphylococcus pyogenes aureus. The remote cause, however, is often exceedingly obscure. It is true that boils are encountered in typical subjects of diabetes, of the exanthemata, and of "hospitalism," in whom anæmia, asthenia, marasmus, malnutrition, and exhaustion resulting from excesses, from grave general disease, from low fevers, and from nervous strain, play a prominent part. But the reverse is also true.

Scratching, eczema, scabies, other cutaneous diseases, lice, and external irritants of various sorts are responsible for many boils, especially

those that are few and not followed by similar lesions. When, however, such sequence occurs it should not be forgotten that the pus is auto-inoculable, and that furuncles, if sufficiently numerous and large, are capable of disturbing the general economy. A collar-button at the back of the neck; the edges of an unyielding corset in one unaccustomed to it; a hard bench; a saddle-tree; a velvet coat-collar sheltering the germs responsible for a previous attack; and many similar articles may be the exciting cause of furuncles.

Account should always be had, in cases of persistent furunculosis, of externally operating poisons. In this category must be included sewer-gas emanations, arsenical wall-papers, and the poisons handled in the trades, *e. g.*, by dyers, lead-manufacturers, etc.

Lastly, it is exceedingly common for patients thus affected to apply to practitioners for remedies intended to "purify the blood"; and, inasmuch as potassium iodide is often prescribed in response to this demand, the original trouble is thus enhanced to a manifold extent. Many cases of furunculosis are instances of boils resulting originally from external irritation, that have greatly multiplied and finally profoundly affected the system under the impulse of the so-called "blood-purifying" process.

Pathology.—According to Unna, most furuncles begin with an impetiginous lesion. Rarely is the hair-follicle the site of implantation of the cocci. After securing access to the rete these germs push before them the prickle-layer, flatten the papillary body, dig into the cutis, and later produce a perifollicular abscess of a lanugo hair-follicle. The abscess spreads by colonies of cocci which are swept laterally along the lymph-channels. Once in the subcutaneous tissue these micro-organisms find few barriers to their development and extension. They are found surrounded by dying pus-cells in the centre of every fat-lobule.

Diagnosis.—Boils are to be distinguished from carbuncles by the aggravated symptoms of the latter. Circumscribed furuncular abscesses of the groins and the axillæ are not to be confounded with suppurating, sympathetic, or virulent buboes of these regions, associated with genital or extragenital contagious venereal sores. Errors of this sort have been made. Furuncles of the anal and genital regions in point of diagnosis may be significant of surgical affections of the neighboring parts (perineal, periprostatic, peri-urethral, and scrotal abscesses in men; suppuration of the vulvo-vaginal gland in women, etc.).

Treatment.—The debilitated constitution of many patients affected with boils indicates clearly the need of a tonic regimen, including the administration of iron, quinine, and strychnine, the mineral acids, and, contrary to the generally accepted opinion of the laity, a generous diet of milk, cream, eggs, and fresh meats. To these articles of diet wines and malt liquors may at times be added with advantage. Change of climate, of diet, of cooks, and of the habits of life is most serviceable in cases of prolonged furunculosis. The mineral waters at some health resorts prove especially valuable for the debility which often results from these disorders. The urine should always be examined for sugar,

albumin, and an excess of urates. The internal remedies which possess reputation in this complaint are arsenic, sulphur and the sodic sulphites, the alkalies, tar, fresh yeast in tablespoonful doses, phosphorus, and the syrup of the hypophosphites of calcium, iron, sodium, and potassium.

Calcium sulphide, which was once more highly esteemed than any other of the internal remedies named, is given in doses of $\frac{1}{10}$ to $\frac{1}{5}$ grain (0.0066–0.0133) every three or four hours. It is doubtful whether the drug exerts any influence whatever upon furuncles. In lithæmia potassium acetate or citrate is given in large dilution, or the liquor potassæ; in gouty states colchicum, salol, and the alkalies, including the sodic salicylate. No one of these articles, however, may be described as an efficient and certain remedy for the complaint; many cases will progress without hindrance from any or all of them.

Attempts in the direction of aborting a furuncle by the topical application of the stronger alkalies (aqua ammoniæ) or acids, caustics, cautery, ice, or premature complete excision with the scalpel, occasionally succeed, but often they fail.

The best methods of local treatment are the simplest. The part may be frequently bathed with a hot, saturated solution of boric acid, and immediately after be covered with lint thickly spread with a paste formed of 2 drachms (8.) each of zinc oxide and powdered starch to $\frac{1}{2}$ ounce (16.) of vaselin; or with freshly made benzoinated zinc ointment. When the pain is unusually intense the parts may be dressed with charpie wet with hot borated lotions and covered with a protective dressing. When the pus is evacuated and the slough wholly or in part detached, the dressings for most cases, after washing with the hot borated lotion, are: boric acid in powder, iodol, iodoform (objectionable on account of its odor), aristol, or hydronaphtol (1 part to 100 of fullers' earth).

Violent squeezing of a furuncle to separate its slough or to evacuate its contents should never be practised.

Prognosis.—Eventually the worst cases are relieved when unaccompanied by systemic or visceral disorders, and when the circumstances of the sufferer permit him to pursue the most advantageous course (travel, diet, abstraction from business, etc.). The resulting cicatrices depend upon the severity of the process. Often they are small and in the course of years become scarcely distinguishable; in exceptional cases they are large, persistent, and disfiguring.

CARBUNCULUS.

(Lat. *carbo*, a live coal.)

(ANTHRAX SIMPLEX, CARBUNCLE. *Ger.*, CARBUNKEL;
Fr., CARBONCLE.)

A carbuncle is a circumscribed cutaneous and subcutaneous abscess, usually larger than a furuncle, that is due to the presence of staphylococci, and is characterized by dense induration and sloughing, terminating in favorable cases by the production of a persistent cicatrix.

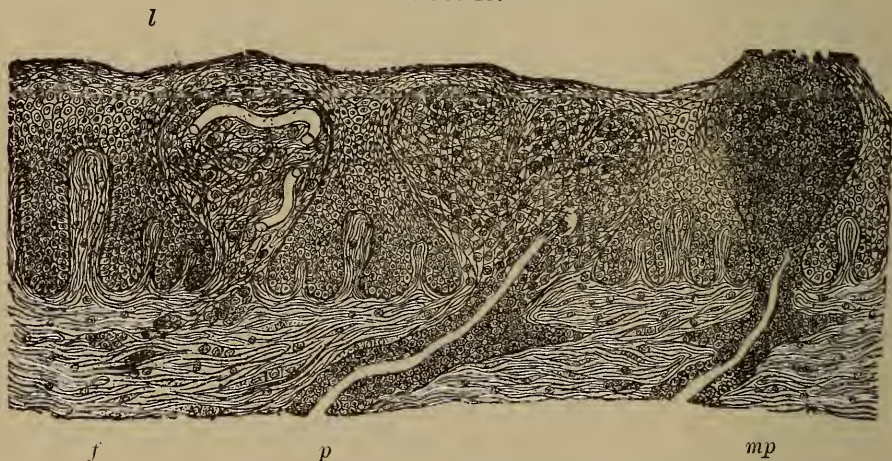
Symptoms.—Carbuncles are often preceded by malaise, chill, and pyrexia of severe grades. There is commonly a burning pain at the site of the lesion. In cases in which the carbuncle is formidable and seated upon or near the head alarming symptoms of prostration, stupor, somnolence, and even coma, may be noted. With and without these concomitants a dense, dull-red, indurated, and painful phlegmon soon appears, varying in size from that of a small hen's-egg to that of an orange and even much larger, involving not only the skin but also the tissues beneath. Suppuration finally occurs, but the pus is not confined to a single space; it undermines the integument and often

FIG. 44.



Vertical section of a carbuncle. Dense network of fibrous bundles, with interspaces communicating and extending to the subcutaneous tissue. (After WARREN.)

FIG. 45.



Section of a carbuncle. Infiltrated papillæ are seen at *l*, distended in balloon-shaped figures, between which the rete is compressed; at *p* and *mp* columnæ adiposæ are seen; *f*, division of elements, the fibrous bundles resolving into protoplasm. (After WARREN.)

through several apertures leaks out indolently to the free surface. The fenestrated or cribriform appearance of the skin covering the carbuncle constitutes in this stage one of its most striking features. Through these apertures may be distinguished the whitish or yellowish pus-soaked sloughs or portions of a single slough, which can at times be extracted through the orifice. Often the entire mass separates in a single slough involving the skin and subcutaneous tissues, leaving a crateriform ulcer of formidable size, which in favorable cases proceeds to heal by granulation. The resulting cicatrix is at first of a deep violaceous tint and later becomes blanched. It is indelible.

The fever which usually accompanies this process may be mild or be severe, or, more commonly in dangerous cases, be of a typhoid character. It results unquestionably from sepsis due to unliberated pus and necrotic tissue, and is naturally most grave in its consequences in patients weakened by previous asthenic disorders. Under these unfavorable circumstances the carbuncle may spread at the periphery, enclosing islands of necrotic tissue and ill-conditioned pus separated by bridges of empurpled, infiltrated, and yielding skin.

The characteristic lesions of this disease most often appear on the back of the neck, the back of the trunk, and the lateral aspect of the hips and thighs, usually in a single development, though occasionally two or even three carbuncles of small or of medium size may coexist. The reason for their appearance in the localities named is clear. It is here that the skin is most thick and resistant, and, as a consequence, purulent foci when formed are covered in by the most voluminous layers of the connective tissue of the corium.

Etiology.—Anthrax simplex is produced by the obscure causes to which reference has already been made as probably effective in the production of boils. Carbuncles and boils may coexist; or the one lesion may follow the other; and there may occur intermediate forms assignable to either class. The disease is encountered more often in men than in women, and in later than in earlier life, simply because the tissues constituting its sites of preference offer in these individuals and at these ages a greater resistance to the exit of pus. The pus-cocci may sustain an etiological or purely an accidental relation to the lesion. Carbuncle is at times an epiphenomenon in cachexia, diabetes, albuminuria, syphilis, pemphigus, and exfoliative dermatitis.

Pathology.—The pathological anatomy of carbuncle has been well described by Warren,¹ whose observations conclusively show that the inflammatory process here is that seen in the simplest pustule. The special symptoms of carbuncle are due solely to the formation of the phlegmon beneath the dense and extremely thick masses of fibrous tissue found in the back “for the protection of that comparatively defenceless portion of the body.” The cell-elements, multiplying with the intensity of the inflammatory process in the subcutaneous adipose tissue, pass upward along the fat-columns, crowd between these and push along the horizontal clefts branching from either side, infiltrate the derma, pass along the edges of the hair-follicles, fill the papillæ until the latter “balloon” with pus, ooze to the surface through the cribriform aperture in the undermined epidermis, and macerate the bundles of fibrous tissue relatively intact that constitute the undetached mass of sloughing tissue.

The constitutional symptoms in carbuncle (pyæmic, septicæmic, or sympathetic) are due solely to pus-imprisonment. The pus-formation is due to the presence of the staphylococcus pyogenes aureus and its toxin. Back of all lies the favorable soil (in the diabetic, the cachectic, etc.) for multiplication of the micro-organism.

Diagnosis.—It follows from what has preceded that carbuncle and furuncle differ solely in the depth of the starting-point of the phlegmon,

¹ The Pathology of Carbuncle, or Anthrax. Cambridge, 1881, p. 15.

and the density and resisting power of the overlying tissue. The carbuncle is, therefore, flatter, denser, less rapidly developed, larger, less tender, and more painful; opens by many rather than by one or two apertures; and is followed by larger sloughs, ulcers, and cicatrices, and occasionally by fatal results.

Treatment.—Crucial and other deep incisions in the local treatment of carbuncle are certainly inferior in results to the course advocated by Wood¹ and Talor,² whose method is employed in cases with complete success, namely: a saturated solution of pure carbolic acid is injected with a hypodermatic syringe through the several apertures in every direction into the sloughing tissues. When the orifices are not sufficiently numerous the point of the needle is thrust through the thinned integument at the summit of the swelling at several points. The pain is severe but short-lived; the tissues are blanched, indurated, and destroyed; the slough in a few days is readily separated after division of its slender fibrous attachments; and the ulcer rapidly contracts with the sequel of a smaller scar. It is necessary to use pure acid in saturated solution to prevent absorption of the injected fluid and the resulting toxic effects.

Relief is afforded in many cases by hot borated lotions and fomentations with the requisite skill in the surgical dressing of the parts, by carbolated lotions, extraction of the slough wholly or in portions with the forceps, and the subsequent employment of boric acid, iodol, iodoform, or aristol, or the paste recommended in the treatment of furuncles. An excellent method of withdrawing the purulent and sloughing contents of the carbuncle is to apply over it at the proper period an exhausted receiver, such as a common cupping-glass.

Erasion of the entire abscess with a curette and subsequent antiseptic dressing is an accepted radical measure of relief for employment in proper cases.

The antiseptic treatment of a carbuncle, however, furnishes the best results as regards the comfort of the patient and limitation of the disease. By this treatment there is absolutely no surgical interference with the lesion beyond the incisions made for the evacuation of pus. Violent squeezing and manipulation of the carbuncle are interdicted; it is freely powdered with boric acid, iodol, or iodoform; and on it is laid soft felt cloth thickly spread with any emollient and antiseptic salve, such as the ordinary zinc-salve. Boric acid in powder or iodol, thickly dusted over the carbuncle and covered with antiseptic wool, will also be found a useful dressing.

Internally calx sulphurata may be administered in full doses; it has, however, a questionable effect in diminishing the pus-formation.

Other constitutional treatment may be demanded in furunculosis, including the liberal employment of tonics, a generous diet, a strict observance of the rules of hygiene, and stimulants when indicated. Pyrexia, septicæmia, pyæmia, and adynamic states require the special management of such complications, including cold sponging of the body-surface in fever, and the use of quinine, the mineral acids, and

¹ Toledo Med. and Surg. Jour., December, 1880.

² Australien Med. Gaz., December 1, 1881.

stimulants, with artificially applied heat in the algid condition. The urine should always be examined for sugar and albumin.

Prognosis.—A serious issue need only be anticipated when the complications described above are grave in character or they occur in asthenic constitutions.

ANTHRAX.

(Gr. *άνθραξ*, a live coal.)

(MALIGNANT PUSTULE, SPLENIC FEVER CARBUNCLE.
Fr., PUSTULE MALIGNÉ, CHARBON.)

Anthrax maligna is a carbuncular lesion resulting from infection of the skin or other organs of the body with a virus containing the anthrax-bacillus, furnished by an animal infected with splenic fever.

This disease in man, fortunately rare of occurrence, results from external inoculation, and is always (Sée) derived from some animal affected with the specific malady variously termed "anthrax," "charbon," "splenic fever," "splenic apoplexy," or "Texas fever." After inoculation with the disease from an infected animal the human subject may (a) perish from systemic poisoning wholly septicæmic in character with few external symptoms; or, (b) when life is sufficiently prolonged, may suffer from visceral symptoms, and develop subcutaneous tumors; or (c) may exhibit the symptoms of the disease now under consideration.

In from twelve hours to three days after inoculation a painless macule, resembling a flea-bite, is first manifested, usually upon the dorsum or other part of the hands or the face to which the virus has had access. The macule is followed in from twelve to fifteen hours by an inflammatory and pruritic papule, which is rapidly transformed into a flaccid vesicle filled with a bloody serum and surmounting a firm indurated "nucleus"; or a larger blood-filled bleb develops reposing upon a somewhat painful, engorged, and often densely indurated base involving extensively the subcutaneous tissue. One or more similar lesions may follow in the surrounding integument, coalescence of which lesions produces a large, angry, œdematous, and often gangrenous ulcer with a reddish areola. The area of skin involved may be of the size of that of a small coin or be as large as the palm of the hand. The lymphatic vessels and ganglia enlarge, become inflamed, and often suppurate; metastatic abscesses form; and the constitutional symptoms supervening are those described in connection with Equinia. If recovery is to ensue, the gangrenous mass will slough as in favorable cases of carbuncle; if the result is to be fatal, the process is rapidly aggravated by œdematous infiltration extending to a wider area and by greater tissue-necrosis.

In some cases the accompanying fever is high, with marked delirium; in other cases it is of a typhoid character. Death results from shock, septicæmia, or exhaustion, though in cases in which the lesion is circumscribed and unattended by constitutional symptoms recovery may ensue.

Etiology.—This disease is induced by infection from one of the

lower animals, usually horned cattle, that suffer from charbon or splenic fever, and are handled by herders, ranchmen, etc. The susceptibility of the carnivora to the disease is very much less than that of the herbivora. It is claimed that not only direct inoculation may produce the disease, but that it may be transmitted through the medium of flies and other insects. More recently it is asserted that food, drink, and even inspired air may be the medium by which the disease is conveyed.

FIG. 46.



Malignant pustule bacilli and pus-corpuscles. (About $\times 300$.)

Pathology.—Since the first investigations reported in 1864 by Davaine to the French Academy, Pasteur, Klebs, Koch, Carnevin, and others have demonstrated that splenic fever is solely due to the multiplication in the blood and tissues of a rod-shaped bacillus, the *bacillus anthracis*, which is non-motile and transparent, measuring from 1 to 1.5 μ to 5 to 20 μ . Under culture the bacilli may develop long filaments many times

larger than the original rods, with a distinct sheath about a protoplasmic cylinder, which filaments after segmentation furnish oval shining spores. These spores have been cultivated in generations, with resulting germs that produced the disease artificially in the lower animals.

The pathological anatomy of malignant pustule is that of carbuncle, with the added fact that specific bacilli and spores are everywhere present in the blood and débris of tissue. There is an almost characteristic oedema of the papillary body, according to Unna: the margin of the epithelium is well preserved; there is an acute vesicular elevation of the horny stratum without a previous breaking up of the connective-tissue layer, and this induces a stretching of all the cavities in a vertical direction.

Diagnosis.—The characteristic features of typical malignant pustule are its central eschar, its crown of vesicles, and its indurated base. In establishing a diagnosis care must be taken to avoid one source of error. Malignant pustule in man is not of frequent occurrence in America, but occasionally various cutaneous eruptions are produced upon the hands after contact with animals or their hides upon which chemical solutions have been applied for the destruction of lice. These solutions usually contain arsenic, corrosive sublimate, or other substance capable of exciting a localized dermatitis. Chancre of the face, carbuncle, and poisoned wounds are all differentiated by their relatively indolent course and the absence of gangrene.

The **Treatment** is to be conducted on the principles of general therapeutics. Deep incisions of the lesion, extended to the subcutaneous connective tissue, are often successful when practised before the occurrence of general symptoms.

Successful results have also been obtained from excision and iodoform dressings. Hebra was not in favor of early cauterization of the malignant pustule, and it may be considered a questionable method of procedure. A grave case of malignant anthrax is recorded in which recovery ensued after hypodermatic injection of tincture of iodine.

Three syringefuls of pure tincture were deposited beneath the skin at the periphery of the diseased surface, and lint saturated with the same fluid was applied over the slough. Internally, 15 drops of iodine tincture (1.), with 3 grains (0.20) of potassium iodide, were also administered. Normal cicatrization followed in this and six other cases recorded.

Crucial incisions with the free application afterward of pure carbolic acid have been followed by good results. Internally, sodium hyposulphite and quinine are successfully employed. The febrile, typhoid, and adynamic features of the disease are to be treated in accordance with the recognized principles of general medicine.

Prognosis.—The disease proves fatal in about one-third of all cases. Early excision gives promise of satisfactory results.

EQUINIA.

(Lat. *equus*, a horse.)

(GLANDERS, FARCY. *Fr.*, MORVE, FARCIN; *Ger.*, ROTZKRANKHEIT, MALIASMUS.)

Equinia is a contagious, virulent, and inoculable disease, transmitted to man from the horse, mule, ass, or other animal; and produced by a bacillus resembling that of tuberculosis. It is conveyed either directly or mediately by the application of cloths and other articles which have been in contact with the bodies of infected animals.

Symptoms.—The acute form of this disease commonly follows a period of malaise lasting a few hours or a few weeks, during which period the patient complains of vague pains of a rheumatoid type, followed by thermal variations. The body-temperature rises rapidly to the point of danger, with chills, fever, diarrhœa (often following constipation), and rapid exhaustion, the picture being suggestive of acute septicæmia.

The cutaneous symptoms begin often with an erysipelatoid blush, the infected and swollen surface, also producing papules, vesicles, pustules, and bullæ, with dense but ill-defined induration of the subcutaneous tissue; or reddish and yellowish papules appear, which, as in the case of the fluid-containing lesions, coalesce and furnish a bloody discharge. These symptoms, in the case of inoculated disease, may develop on the site of the healed or healing wound of entry of the virus, and later become generalized. Sloughing ensues more or less rapidly, sometimes with extensive gangrene, though the patient often succumbs before the culmination of the morbid process. The lymphatic vessels are swollen and well defined, often indurated. These symptoms chiefly affect the face, hands, feet, and other exposed parts of the body. There is often a sanious or purulent and offensive discharge from the nostrils, the mouth, and the eyes, the inflammatory process spreading rapidly to the deeper mucous surfaces. This catarrh, chiefly nasal in site and declared conspicuously by the nasal voice due to the blocking up of the nostrils by the viscid, foul-smelling, hemorrhagic discharge, is one of the most characteristic features of the malady, and is of importance in the diagnosis.

In the chronic form of the disease the nasal catarrh is less conspic-

uous at the outset, though later it may be a prominent feature of the malady. A few days or weeks after infection, pustules, as in the acute form, resembling those of variola, but flattened and never umbilicated, begin as vesicles or even as papules, coalesce to bullæ, occur in successive crops, and proceed to the production of multiple abscesses, poorly defined on the extremities and about the face, much more rarely developed on the trunk. These abscesses may be of phlegmonous type; or be deep, brawny infiltrations with purulent foci, extending over months of invasion and decline of the disease. From these abscesses, pea- to nut-sized over the face, larger on the limbs, flows an abundant, sanious, semiliquid or viscid, yellowish, offensive pus. Ulcers form at many points, with purplish borders, oval or roundish countour, and thin edges, suggesting the scrofulous ulcer of classical type. The edges may be soft or indurated. By this multiplication or coalescence the lips, nose, eyelids, and other parts of the face may in part or wholly be destroyed. The disease may steadily advance or may seem to be arrested for a time and reawaken to activity. Meantime the lymphatic glands are either unchanged or are enlarged by sympathy. In the course of months or years there is a fatal issue. The disease is, fortunately, rare.

Etiology and Pathology.—Equinia is almost invariably produced by infection from horses, a history of contact with such animals being one of the important points in establishing a diagnosis. The infection is produced by the *gladders-bacillus* (Weichselbaum, Schütz, Loeffler, Bouchard). This organism is nearly of the size of the tubercle-bacillus, having been cultivated and found capable of producing the disease in the lower animals after injection of cultures. The bacilli are abundant in papules, abscesses, blood, and brain-tissue.

The **Treatment** is that of the septic condition, and is of little avail.

The **Prognosis** is in the highest degree grave.

DISSECTION-WOUNDS AND ANIMAL POISONS.

Aside from *verruca necrogenica*, or anatomical tubercle, described in the chapter on Tuberculosis Cutis, lesions generally known as "dissection-wounds" occur with symptoms of acute poisoning upon the hands of those exposed in post-mortem examinations and dissections. At the inoculation-point, which may be either the site of a former abrasion, a rent, or the mouth of an open follicle, a painful vesico-pustule, papule, tubercle, wart, furuncle, or hemorrhagic bulla rapidly rises from an angry and indurated base with hyperæmic areola of dull-red shade. Suppuration, crusting, or ulceration, limited to the seat of the lesion, may follow; or there may occur lymphangitis in various grades with consequent pyæmic or septicæmic involvement of the system. Suppurative and non-suppurative axillary buboes are common. Gangrene and necrosis of the soft parts and the bones, especially the phalanges, may ensue, as may also a fatal result from the systemic disorders named. Rarely an acute and fatal septicæmia may result when the lesion at the point of inoculation is so slight as to pass unnoticed. In a few cases chronic marasmus is induced.

The nature of the infection varies in different cases. It is most commonly due to pyogenic bacteria, but may be caused by the specific micro-organisms of tetanus, erysipelas, anthrax, or other infectious disease. The absorption of toxins resulting from the decomposition of animal tissues is undoubtedly an important factor in the infection.

The treatment is to be conducted in accordance with the principles already described. Prophylaxis, by proper protection of the hands, and the immediate cleansing and disinfection of any accidentally wounded point, are of the highest importance.

PUSTULES AND OTHER LESIONS RESULTING FROM WOUNDS INFLICTED BY REPTILES AND INSECTS are often of an insignificant character. Such are the trivial results of the bites or the stings of flies, fleas, mosquitoes, ants, bees, hornets, etc. At other times, however, serious and even fatal consequences have been recorded. The wounds produced by the tarantula and the scorpion (which frequently lurk in the clusters of tropical fruit now imported to almost every part of the United States), as also of venomous reptiles, may prove to be grave. Urticarial, vesicular, pustular, papular, bullous, and petechial lesions may thus originate and be the cause of a more or less severe dermatitis with toxic symptoms. In the latter event it is common to administer as remedial agents alcoholic stimulants as freely as they can be ingested.

DELHI BOIL.

(ALEPPO EVIL, BISKRA BOUTON, ORIENTAL BUTTON, ORIENTAL ULCER, GAFFSA BUTTON, NATAL SORE. *Fr.*, BOUTON D'ORIENT, CLOU DE BISKRA.)

This is a chronic contagious endemic disorder characterized by the occurrence of painful or painless nodosities upon the face, the hands, and other chiefly exposed portions of the body. The lesions are single or multiple, pea- to bean-sized pinkish papulo-tubercles, which in the course of three or four months become purulent and ulcerate indolently, or they become covered with crusts and scales. They are often grouped in patches and followed by characteristic cicatrices. The exact nature of the malady thus variously named is unknown. It is quite fully described by Fox, Farquhar, Pollack, Villemin, and other authors, as occurring in India, the region about the Euphrates and Tigris Rivers, and along the northern coast of Africa, especially Algeria and Morocco.

Laveran¹ has described the Biskra bouton as occurring not only in Biskra, but also in the adjoining oasis. It shows itself as an endemic only in the months of September and October and continues until December, no new cases appearing in January and February. All ages, both sexes, the strong and weak, are liable to the disorder. The eruption affects the face and the extremities by preference, sometimes also the trunk. It ordinarily attacks the same person but once, yet may recur. So long as the disease prevails the least excoriation has a tendency to become Biskra bouton. At first there is a reddish,

¹ Annal. de Derm. et de Syph., 1881, i., p. 173.

painless elevation of the skin, the size of a pin's head, that grows slowly, so that at the end of four or five months it attains the size of a small furuncle that is livid, sensitive, smooth, and boggy to the touch; the centre of this elevation dries and a brownish rupioid crust forms, which is easily removable. Beneath this crust there usually forms a small round spongy ulcer, with ragged margin, ovoid contour, and ichorous discharge. The papules may occur in patches bearing thick crusts which long persist. The crusts are remarkably dry, and if undisturbed may eventually fall and leave no scar, though frequently ulceration progresses beneath the crusts. Healing is followed by the production of a permanent and deforming scar, the entire course of the disease lasting a year.

The ulcers are usually single, but they may be multiple and may coalesce to form large ulcerating, granulating patches. They are usually irregular in form, with hard borders and soft red floors covered more or less with fungoid granulations and a thin ichorous discharge. Lymphangitis, erysipelas, and phlebitis occur as complications.

Pathology.—Elliott, of New York, reports that the disease is limited to the epidermis and corium, and that its area is occupied by small round inflammatory or formative cells and epithelial elements. There is a distinct line of separation between the healthy and the diseased tissue. No cryptogamous or other micro-organisms have been recognized. The hair-follicles and other glandular structures are intact. The disease is contagious and inoculable and perhaps auto-inoculable.

The horny layer is loosened; the prickle-cells are multiplied peripherally and centrally thinned or lost. Hyaline spheres and rounded masses are found between the cells of the infiltrated cutis. Leloir discovered an endarteritis obliterans. The cellular infiltration involves the entire cutaneous and subcutaneous tissue. The lymph-spaces are widely distended (Riehl, Leloir, Duclaux). Unna regards the process as a chronic serofibrinous inflammation of the entire cutis with central necrosis, softening, and ulceration. Cocci have been found in zoöglæa masses by Duclaux and Heydenreich, but no successful inoculations have been made with pure cultures.

Treatment is not very successful, and often an expectant method is the best. In the majority of cases the ulcers should be treated on surgical principles with antiseptic and bactericidal dressings. Iodoform, tincture of iodine, silver nitrate in stick or in solution, and various preparations of the mercurials have been used with success. In some cases caustics, the cautery, or even surgical extirpation may properly be employed.

Altounyan found the best treatment to be painting of the button with tincture of iodine, and that, as a rule, one attack conferred immunity against a second. He believes the disease to result from the bite or the sting of an insect.

PHAGEDÆNA TROPICA (Aden Ulcer, Malabar Ulcer).—Hirsch, Parke, and others describe a disease occurring chiefly among natives of the tropics, but also attacking travellers in tropical countries. It is rare in temperate zones: its victims are those chiefly who have been

exhausted by fatigue, malaria, and malnutrition. In these cases a slight traumatism becomes later the seat of a vesicle or a bleb from which as a centre spreads a rapidly phagedænic sore extending by sloughs through skin, muscle, tendon, and bone. The disorder is usually first noticed on the exposed parts of the lower limbs, but other regions may earliest be involved. In mild cases there is arrest of the process before severe destruction is accomplished, and then cicatrization follows.

The malady is aggravated by all unfavorable climatic and individual conditions. Microbes, supposed to be pathogenic, have been discovered by Boinet, who also cultivated these organisms and produced successful inoculations of animals.

The treatment is precisely that employed for all similar surgical emergencies, viz., support by proper food and medicines; locally, antiseptics and parasitocides. The caustics employed by the French are inferior to effective parasitocides, such as borated, salicylated, and sublimate dressings, and formaldehyd.

PHLEGMONE DIFFUSA.

(Gr. *φλεγμονή*, an inflamed tumor.)

The word phlegmon is employed by most English and American writers to indicate a circumscribed cutaneous inflammation which terminates naturally in suppuration, and which, as to the tissues involved, is larger than an ecchymatous pustule, yet is not large enough to be termed an abscess. Circumscribed phlegmons are represented by most furuncles, and, at one stage of their career, also by carbuncles. In the disorder under consideration, however, the symptoms, both local and general, are far more serious than either furuncle or carbuncle. The disease is particularly prone to develop in children, especially infants, and in women. The first evidence of trouble may be a severe chill followed by high fever and a deep-seated hammering pain, felt in the part which is the seat of the disease. This site is soon recognized as an œdematous area, of dull-red or livid hue, tensely infiltrated, of the familiar brawny type and indeterminate outline. All these symptoms, which rapidly increase, as resolution is rarely attained, are followed by suppuration at one or more points. In diffuse phlegmon, however, the brawny tenseness of the inflamed skin has been so great that, as a consequence, vascular thrombosis occurs and the circulation is greatly impeded between the points at which pus forms or about a single point. The tissues then become more or less necrotic, both during and after the formation and evacuation of pus.

The fever meantime may abate or may entirely remit, or, in grave cases, may steadily persist. In the latter event the subcutaneous tissue, fasciæ, periosteum, bones, joints, and ligaments may be involved. But in favorable cases the systemic condition is greatly improved when pus is no longer deeply or extensively formed, and when the gangrenous shreds and sloughs are well loosened or are entirely removed.

The "acute purulent œdema" of English authors and the *gangrène*

foudroyante of the French may be regarded as severe types of diffuse phlegmon. In most of these grave cases patients die septicæmic before complete evolution of the cutaneous inflammation is reached. In other cases the affected part, suddenly losing its tense, brawny hardness, becomes emphysematous or crepitates with bubbles of gas produced by decomposition. The patient may then become somnolent or delirious, or be the victim of an intercurrent and fatal involvement of the kidneys, lungs, liver, spleen, or bowels.

The **Treatment** of diffuse phlegmon is largely surgical. Incision, drainage, and disinfection are the three essential requirements. These measures thoroughly assured, the systemic treatment is by quinine, stimulants when indicated, and the accepted remedies for the typhoid condition generally, including rest in the recumbent posture and a proper supply of wholesome air and food. Amputation of limbs may be necessary to save life.

The **Prognosis** rests almost entirely upon the extent, diffusion, and severity of the local inflammation, and upon the systemic condition of the patient. In a previously healthy subject, with good hygienic environment and the absence of thrombosis, pyæmia, septicæmia, and erysipelas, the result will generally be favorable. With the reverse of these conditions the outcome may be serious as regards the loss of a limb, deformity, or a fatal issue.

SYCOSIS.

(Gr. *σῦκον*, a fig.)

The title "sycosis" no longer indicates an idiopathic affection. It is employed in these pages to designate a group of different disorders, which, affecting for the most part the region of the male beard, may be for practical purposes classified as follows:

COCCOGENOUS SYCOSIS includes the most numerous of the cases to which the term "sycosis non-parasitica" was once given, and which are all due to invasion of the pilo-sebaceous crypts by pus-cocci. These pyogenic organisms may be either primarily or secondarily effective in producing the symptoms of the disease. In many cases a suppurative folliculitis follows the disorders included in the group last named.

BACILLOGENOUS SYCOSIS is described by Tommasoli.¹

HYPHOGENOUS SYCOSIS (BARBERS' ITCH, RINGWORM OF THE BEARD) is due to the presence of either the microsporon Audouini or the trichophytons (TRICHOPHYTOSIS BARBÆ). It is described in this work among the Tineæ.

A group of **SCAR-LEAVING SYCOSIFORM DERMATOSES** (LUPOID SYCOSIS, ULERYTHEMA SYCOSIFORME, etc.) may also be recognized which differ somewhat from those named above. They include the pseudo-sycoses, the eczemas limited to the region of the beard with acneiform features, the eczemas of the same region with seborrhœic complications, certain forms of lupus erythematosus of the beard, and the still rarer

¹ Monatsch. f. prakt. Derm., 1883, p. 403.

sycoses possibly due to tuberculous infection of pustular lesions of the bearded face.

COCCOGENOUS SYCOSIS.

("NON-PARASITIC" SYCOSIS, SYCOSIS VULGARIS, SYCOSIS STAPHYLOGENES, MENTAGRA, FICOSIS, FOLLICULITIS BABBÆ. *Ger.*, BARTFINNE.)

Symptoms.—The lesions appear upon the face, involving one or both cheeks successively or simultaneously, the chin, the upper lip, the eyebrows, the scalp, the axillæ, and the pubes. The disease, however, is almost always limited to the region of the beard in men. In this respect sycosis differs from acne and other disorders of the sebaceous glands of the face with which authors have sought to identify it, since not only is it, as a rule, strictly limited to the region of the beard, but also the non-hairy portions of the face of the patient are free from comedones, acne-lesions, and other symptoms of a cutaneous disorder.

When seated upon the upper lip the first symptoms may be those of a nasal catarrh; seated elsewhere an eczematous attack may precede the onset of the disease. It may be ushered in with the acute symptoms exhibited in the early stage of some forms of eczema, and with tumefaction accompanied by a sensation of heat and burning; but often a few isolated and indolent lesions, the presence of which scarcely awakens attention, are the first traces of the disorder. Soon there may be recognized a larger or smaller number of discrete, pin-point to split-pea-sized, flattened or conical, reddish and painful papules, tubercles, or pustules, the anatomical seat of which is distinguished as the pilary follicle because of the penetration of each lesion by a filament of hair. These lesions may persist, and when typically discrete and visible at the part at which the hair makes its exit from the duct of the follicle they suggest the appearance of the surface of the fig, whence the disease derives its name. They are apt to occasion a burning and at times a decidedly pruritic sensation when, being picked or torn open by the fingers, the pus concretes into a crust at the base of the hair. In severer cases these lesions, while not coalescing, are so closely set together as to form a patch of continuous infiltration. These patches may be weeping or be crusted; in the latter case the crusts are apt to be small and numerous, each crust being limited to the shaft of a single hair, and leaving when removed a minute crateriform excavation at the mouth of the follicle.

Involution of several lesions may be followed by fresh crops, and, sooner or later, distinct patches of disease are thus formed. When fully developed the surface of the skin is reddened, swollen, infiltrated, and thickened; covered irregularly with papules, pustules, crusts, and scales, and frequently with excoriations. The disease often lapses into chronic conditions, usually the result of improper treatment, and in ancient cases the deformity is characteristic and totally unlike that produced by the vegetable parasites. The hairs are usually fixed firmly in their follicles, but from those in which active suppuration is in progress the hairs may be plucked without occasioning much pain.

In cases which have been treated for years the hairs are thinned and decidedly lack vigor.

In typical and neglected cases of long standing, in which the region of the beard is involved, an important clinical feature is the symmetrical, general, and uniform involvement of the entire surface. The picture of one cheek is very nearly that of the other. The sparse hairs scarcely serve to disguise the reddened, tumid, painful surface beneath, which displays the severe lesions of the malady. Furuncles, abscesses, cicatrices, vegetations, and eczema of the ears may complicate the process. Sycosis is occasionally acute in its course, but is more often chronic and rebellious. A typically chronic and untreated case of the malady rarely terminates by spontaneous involution.

The thinning of the hairs, described above as a consequence of long persistence of the disease, is far more characteristic than any distinctly resulting alopecia; the latter, however, very rarely occurs, but is then remediless. The same may be said of resulting cicatrization, which is one of the rarest consequences, and which is generally due to bacillogenous infection.

The absence of certain symptoms in this disorder is as significant as is the presence of others. Adenopathy of the cervical glands is very rare, but when present it should awaken suspicion of another malady. The disease when of longest persistence as to time produces great unsightliness, but not the deep-seated, subcutaneous, small- or large-nut-sized nodules or tubercles, forming the "lumps" so characteristic of trichophytosis of the beard. Sycosis vulgaris is a disease of chronic course, which may endure for years and be characterized by relapses and aggravations, but is entirely curable; it is only in neglected and improperly treated cases that such persistence may be expected.

SCAR-LEAVING SYCOSIFORM DERMATOSIS (LUPOID SYCOSIS, ULERYTHEMA SYCOSIFORME, SÉBORRHÉE DÉPILANTE).—Under these titles has been described a somewhat rare affection of the skin of the bearded face in men, the symptoms of which at the outset are practically those of sycosis vulgaris. In the course of the disease, however, whether in consequence of an added infection or as the result of the evolution of the malady, a change occurs in which the hair-follicles atrophy and considerable scarring results. The scars are often irregularly depressed between ridges and linear elevations of the surface. By Unna this dermatosis is grouped with a class of disorders to which he has given the title of "ulerythemata." It is possible that the disease may be eventually recognized as a tuberculous complication of ordinary sycosis or one dependent upon the toxins of tubercle-bacilli. The course of the affection is exceedingly chronic, lasting, with alternations of improvement and aggravation, for several years. According to Robinson, the inflammation in these cases spreads peripherally upward or downward with a narrow infiltrated margin. The lesions outside of the follicles may be papular, vesicular, or pustular in type. The tendency to extension from a given centre and to irregular scarring are the chief characteristic features of the malady.

Many of these cases strongly suggest in their features the symptoms of lupus erythematosus. In some instances the two affections are

indistinguishable. The malady is exceedingly obstinate and often requires severe local treatment.

Etiology.—Sycosis vulgaris is unquestionably due to either primary or secondary invasion of the pilo-sebaceous follicle by micro-organisms. Obviously in many cases there is a special reason for the accessibility of the germs to the crypts where they are lodged. Shaving, and the use in common of towels, brushes, combs, etc., in public establishments (club-houses, barber-shops, hotels), and the employment of pillows, lounges, and reclining-chairs in public resorts are often the origin of the mischief.

The disorder is encountered chiefly among men after puberty, and in those of all social conditions and grades of health. It is not transmissible by heredity. The mere performance of shaving is not known to produce it. At times the immediate cause of the disease is recognized when the upper lip is constantly irritated by a discharge due to profuse nasal catarrh. In other cases, again, all the causes of eczema may be invoked in explanation of the result.

A careful study of many cases suggests that the hairs themselves are among the aggravating causes of the disease and the sources of its peculiar obstinacy. In health the motions of the free shaft of the hair do not irritate the follicle in which it is set; in conditions of disease it is quite different. Each free hair operates like a lever upon the inflamed ring-tissue which encircles it on its escape from the follicle beneath, and thus by the touch of the hand, by the action of brushing, by currents of air, or by any agency whatever, movement may be imparted to it. Every such movement teases to a variable degree the previously irritated surface beneath; and when estimate is made of the hundreds of such movements to which each hair is subjected during a period of twenty-four hours, the relative importance of this apparently insignificant factor may be appreciated.

Pathology.—The disease is due to pyogenic cocci exciting an inflammatory process, which, whether originally follicular or perifollicular in seat, may extend either toward or from the follicle. Sometimes extraction of the hair is followed by a drop of pure pus which exudes from the follicle, and the root-sheaths of the hairs are seen to be altered in consequence of the circumscribed follicular abscess. At other times the follicle itself is free from disease, and the exudative process has evidently expended itself upon the perifollicular or even the interfollicular tissues, in which case the papillary layer of the derma exhibits the usual phenomena of hyperæmia, infiltration, and multiplication of protoplasm, with abundant vascular dilatation.

According to Robinson, the disease always begins as a perifollicular inflammation, under the influence of which transuded serum penetrates the follicle. Maceration and eventual destruction of the root-sheath of the hair result with the ultimate production of pus within and without the follicle. The pus when the hair remains in the follicle, finds its way to the surface by breaking through the epidermis near the hair; occasionally exit is obtained between the shaft and the follicle-sheath.

The hair-papilla usually escapes destruction, so that permanent

alopecia seldom follows. The sebaceous glands are occasionally involved and even destroyed, but the coil-glands are affected in exceptional cases only. The hair, according to Unna, is closely encapsuled by horny cells which surround the neck of the hair-follicle, like a horse-collar. When pus is formed in the cutis, colonies of cocci spread from about the neck of the follicle into the cutaneous abscess and sometimes as deeply as the hypoderm. The cocci may also accumulate within the follicle. In total suppuration of the follicle the tightly packed cocci fill the hair-fissure, occupy the centre of the follicular abscess, and extend parallel to the skin on the under margin of the abscess.

The micro-organisms recognized (by culture and reinfection) as the effective agents in the production of Tommasoli's bacillo-genous sycosis were bacilli with rounded extremities presenting an elliptical or ovoid appearance. They measured 1.0 to 1.5×0.25 to 0.3μ . The symptoms clinically resembled those of coccogenous sycosis.

Diagnosis.—The most important consideration here is the distinction between the coccogenous and the hyphogenous diseases of the region of the beard, upon which point, naturally, the microscope finally decides. Still the clinical features of the two affections are quite distinct. The coccogenous form is recognized: (a) by the greater redness of the involved surface; (b) by the extension of the disease in advanced cases to larger areas of symmetrical involvement; (c) by the more superficial character of the lesions; and (d) by the firm implantation of the hairs in their follicles in the earlier periods of the disease, their relative freedom in all cases from fracture, and the absence of stumps. The hyphogenous disease of the hairs is peculiar, in consequence of: (a) decidedly less redness of the surface attacked; (b) the frequent limitation of the malady to a circumscribed area, or to several such, irregularly dispersed over a large region; (c) the peculiar "lumpy, tubercular, nodular, and uneven" characters of the patch, upon which Dühring has laid significant emphasis; and (d) the earlier loosening of the hairs in their follicles, as also of the occurrence of fractured hairs and of stumps, exhibiting usually at the bulb unmistakable evidences of the nature of the disease. The malady is often mistaken for syphilis, chiefly on account of the unsightliness it produces; but the pustular syphiloderm is very much less chronic in its course, is rarely limited for years to the face exclusively, and, when long persistent in one locality, is characterized by ulceration and the production of very characteristic crusts.

Eczema may complicate the coccogenous disease by preceding or by following it, but typical instances of the two disorders may be recognized by the occurrence, in the case of eczema, of a discharging disease, not usually limited to the region of the beard, characterized by a more intense itching, and with marked absence of the papulo-tubercular lesions described above. The lesions in eczema, moreover, are not invariably perforated by hairs. The shaven face affected with erythematous eczema is reddish in color, and desquamates, after full evolution of the disorder, without pustulation.

Treatment.—In all cases of sycosis the essential and important step is the continued removal of the hairs which, as indicated above, are the chief sources of aggravation of the disease. This removal is best

accomplished by epilation or by shaving, which, though often painful at the onset, is soon well tolerated by the sufferer. The majority of patients, however, object to removal of the beard, far more on account of the consequent greater exposure to view of the unsightliness induced by the disease (then no longer partly masked by the hairs) than on account of the distress occasioned by the operation. To these objections there is but one response—the shaving is essential; the deformity is rapidly relieved after its successful initiation; the discomfort diminishes with each repetition of the process. For the disease in patients positively refusing to have the beard removed, whose cases are so severe as to require it, the practitioner will do well to decline to be responsible. There is no limit to the tedious and obstinate course of the malady in the one case, and in the other the results are speedily satisfactory, often in the course of a few weeks.

When there is much tenderness, pain, swelling, pustulation, or crusting, the hairs may first be clipped short, and a bland poultice of oil, elm-bark, or of bread and milk applied. The practice in Vienna is to substitute for the poultice strips of soft muslin or linen spread with diachylon ointment, firmly bandaged over the cheeks, chin, or lips for from twelve to twenty-four hours, after which a razor is passed over the entire surface. The integument which thus becomes visible is usually a reddened infiltrated area, with pustules, papules, pustulo-papules, and some crusts dispersed here and there over it. After exit is given to all purulent collections this area is best treated by hot-water lotions, borated or alkalinized, and then a bland ointment is to be applied at night and a borated dusting-powder in the morning. Formalin lotions of the strength of 1 to 2 per cent. are valuable in all stages of the disorder. The subsequent treatment is largely that of eczema of equal grade of severity. In the more acute periods oleated lime-water, medicated with calomel or with zinc oxide, $\frac{1}{2}$ to 1 drachm (2.-4.) of either to the pint (512.), may often be employed with benefit; or for this application may be substituted 2 ounces (64.) each of linseed-oil, Castile soap, and paraffin, to the pint (512.) of aqua calcis. Later, the Lassar paste or ointments may be used, particularly cold-cream salve, to which may be added either sulphur, zinc oxide, or, less preferably, one of the mercurials. Lotions of mercuric chloride, sulphur, alcohol, cologne-water, or iodated glycerin may be useful in stimulating indolent patches of infiltration. The treatment of these patches is indeed that of chronic eczema.

Epilation is often essential for relief of the disease; and in chronic cases severe methods have been employed, including the use of green soap, tar, and cauterization with acetic and even with nitric acid. Erasion with the curette is to be named in the same category. These measures have been employed in aggravated cases; but as the disease is certainly curable in a majority of patients without having recourse to these heroic methods, they are to be regarded in the light of a *dernier ressort*. It is not necessary in the majority of coccogenous forms of sycosis either to epilate or to employ caustics. By repeated and frequent use of hot borated water, formalin lotions, and the milder stimulants, with constant shaving, the desired result is usually

within reach. Shaving should be continued for nearly a year after all traces of the disease have disappeared; and it is a point of some importance to substitute for a fatty application a continuously applied borated powder as soon as the skin will tolerate the persistent use of the latter.

Van Harlingen advises for acute cases a wash composed of $\frac{1}{2}$ pint (256.) of rose-water, to which 1 drachm (4.) each of precipitated zinc carbonate and zinc oxide in powder have been added, with 2 drachms (8.) of glycerin and dilute liquor plumbi subacetatis. Viel recommends a solution of pyrogallol (1 part to 50) for painting over the region affected, followed in the day by emollient cataplasms and in the night by diachylon or weak tannin ointments. Sycosis of other portions of the body is to be treated as described for the region of the beard.

Internally, treatment, when indicated, should be of the kind demanded by the condition of the patient. It is a matter worthy of special attention, however to purge every previously treated case of suspicion of artificial element, by withdrawing for a time all internal medication. The disease is so disfiguring that many patients swallow potassium iodide, arsenic, and other deleterious drugs for months before consulting one who is wiser than they in these matters. Exposure of the face to dust, smoke, wind, and other sources of irritation should for a time be avoided.

In the hygienic management of these cases all use of tobacco and alcoholic beverages is to be abandoned. Even the drinking of hot tea, coffee, and stimulating beverages of other kinds is to be interdicted. The diet should be of the simple character recommended in eczema. Inasmuch as many patients suffer from a coincident nasal catarrh, hot baths should be exchanged for daily cold sponging of the body-surface, for patients able to endure the shock, followed by brisk friction with flesh-brush or with coarse towels.

In acute cases it may be desirable to begin treatment with a brisk mercurial cathartic; the alkaline diuretics advised by authors will, at least, do no harm if judiciously employed. The same may be said of calx sulphurata and minute doses of calomel in the pustular stages of the affection. But in other cases cod-liver oil and iron are demanded by the general condition of the patient, usually one of the class exhibiting the evidences of "hospitalism." No firm believer in the coccogenous etiology of the disorder will, however, expect by these measures alone to relieve the disease.

Prognosis.—The disease is entirely curable, and will, in the large majority of all cases, either disappear entirely or greatly be improved by judicious treatment. The latter requires the personal supervision of the physician and close attention to details.

In exceptional cases the disorder is exceedingly chronic and obstinate, and requires perseverance on the part of both physician and patient to attain the desired end. Relapses are of frequent occurrence, due usually to neglect of asepsis after apparent recovery. In a few very rare cases (lupoid sycosis, tuberculosis) there is cicatricial tissue left after repair.

IMPETIGO.

(Lat. *impetere*, to rush upon.)

(Ger., KRUSTENFLECHTE; Fr., DARTRE HUMIDE.)

The researches of Bockhart and others have demonstrated that the symptoms once designated by the term "impetigo," as also those of furunculosis and sycosis, are simply the local results of infection with staphylococci and streptococci. The symptoms to which in different cases these several names are given differ in consequence of the accidents of location, the sex of the patient, and the opportunities for extension of the disease.

Hebra stated that, even in his day, the pustular cutaneous affection described by authors under the name "impetigo" had no existence as an independent disease. Unquestionably a long list of disorders hitherto described under this term included, in fact, forms of pustular eczema. The reasons for retaining the name given above and for assigning to it certain peculiar eruptive features are based upon the simple fact that the lesions displayed, probably in consequence of the operation in a similar way of like causes, reproduce themselves again and again, so as to exhibit the same clinical picture in different patients. The convenience of the name impetigo, as descriptive of a group of cutaneous symptoms, is therefore the sole reason for its retention. There is, however, among some dermatologists of the French school a tendency to consider impetigo a distinct disease and to distinguish several forms, each having a definite cause and capable of reproducing itself through inoculation.

Symptoms.—The disease is not infrequently encountered, being observed chiefly in children and young adults of both sexes, though typical symptoms may be exhibited at any period of life. In such patients, from one to twenty or more isolated and often widely separated minute vesicles or vesico-pustules, superficial, without areolæ, without induration, and usually acuminate, appear upon the skin-surface either simultaneously or in rapid succession occasionally after a slight access of fever. They are speedily transformed into split-pea-sized or larger, circumscribed, oval or circular pustules, so rapidly transformed, in fact, that often the early vesicular phase is not manifest, the lesions showing as minute pustules from the first. When fully developed they are globular, yellowish white in color, discrete, well distended with their puriform, rarely bloody contents, and projected clearly from the surface on which they rest. They may be surrounded by an erythematous areola, or simply be superimposed upon an integument of unaltered color. They may persist as pustules, or may burst, their contents drying into a yellowish crust resembling honey, or into brownish-tinted concretions which adhere with firmness to the superficial and circumscribed base, where a slight weeping can be determined. They run an acute course, usually terminating within a fortnight. They are much more commonly observed upon the face, but are recognized elsewhere, always sparsely upon the trunk and extremities. The eruption is never in any sense generalized, its characteristic feature being the fewness of the lesions,

which are scarcely ever grouped, and which occur in capriciously selected locations. The subjective sensations are slight, and the eruption is more often picked than scratched. The disease bears no relation to pustular eczema. It is common in dispensary and hospital patients, and since these are often the victims of neglect and the subjects of vices of nutrition it has been considered the appanage of scrofula. But the disease is also encountered in well-nourished and rosy-cheeked children; in the latter, when well cared for, the eruption proceeds regularly to resolution, while in the former it is prolonged and often aggravated, thus attracting to a greater degree the attention of the physician. The pustules are never umbilicated, never seated upon ulcers, and are never followed by cicatrices.

IMPETIGO CONTAGIOSA (PORRIGO LARVALIS, PORRIGO CONTAGIOSA, PEMPHIGUS ACUTUS CONTAGIOSUS ADULTORUM (PONTOPPIDAN), IMPETIGO CONTAGIOSA BULLOSA).—In 1862 Tilbury Fox gave the name *impetigo contagiosa* to a group of symptoms which were by him supposed to be characteristic of a definite disease. These lesions are now recognized as those of *impetigo*.

The eruption, occurring in infancy, childhood, and early adult life, may be preceded by a febrile process, and appears in the form of rarely numerous, isolated vesicles, vesico-pustules, pustules, or bullæ, usually about the face, but also upon the neck, the buttocks, the hands, or the feet. In severe cases these lesions are surrounded by an areola. The lesions are roundish, flat, have the average size of that of a split pea, and become covered in the course of a few days with dry, granular, straw-colored crusts which closely adhere to the slightly reddened base on which they rest. Beneath the crusts are to be discovered very superficial erosions which rapidly become covered with epidermis. They occasionally coalesce, and their complete involution requires from a week to a fortnight. When they are of the dimensions of bullæ a pseudo-umbilication may be observed at the apex, produced solely by flaccidity of the roof-wall, which is never “guyed” down, as in variola. The contents of the lesions are inoculable and auto-inoculable, the disease thus spreading from one member of a family to another, and also from one part of the body of an individual to another part. The mucous surfaces are occasionally invaded (*impetiginous stomatitis*). The subjective sensations are mild, the itching rarely being severe. The disease runs a tolerably definite course, being usually at an end in a fortnight; it may recur. It may be, Kaposi states that it is at all times, accompanied by submaxillary adenopathy.

Impetigo may be indicative of the symptoms of several widely differing causes, all resulting in a coccogenous or hyphogeneous disorder. In some cases the irritation is set up by the encroachments of the trichophyton. In other cases there are pediculi of the occipital region, and the scratching set up in children in consequence of attacks of lice furnishes the opportunity for infection with staphylococci. In yet other cases the micro-organisms responsible for varicella have operated to produce the symptoms.

The several clinical pictures differ on account of the greater or lesser

diffusion of the contagious elements in each case ; for example, there may be a few isolated pea-sized and larger vesico-pustules on a single hand ; or many may be clustered about the mouth and lips ; or dense greenish crusts may succeed such lesions over occiput or scalp ; or there may be much larger pustulo-bullous elements over the legs, torn, scratched, and thickly crusted or covered with hemorrhagic incrustations. In rare instances circinate, annular, gyrate, serpiginous, herpetic, variolaform, and even pustulo-crustaceous lesions have been observed. The disorder is not often seen in private practice, but in public patients it is seen among the cachectic, the filthy, and the neglected.

Etiology.—The cause of impetigo is mixed infection with streptococci and staphylococci ; often the one is grafted upon the other. The peculiarities of the cocci are the shortness of their chains, the slightness of their incurvations, their failure to interlace, and the irregular form of the elements of which the chains are composed. For these reasons an attempt has been made to disassociate, without result thus far, the germs of this disease from those found in the pus of other affections.

The disease occurs rather at the age of childhood than in infancy and adult life, a period when the hands are first brought into habitual contact with the face, these quite suggestively being the sites of election. The lesions are rarely scratched, being more often torn with the nails in picking, so that the crusts may be somewhat blood-colored. The practice of picking the nose and other parts of the face and the body with unwashed hands is the chief source of mischief. In later life the habit of refraining from carrying the hands to the face when the former are soiled becomes instinctive. Before this instinct is well established—that is, in childhood—the hands will convey to the head any particle of filth or of dust with which they may have been brought in contact.

The somewhat obscure relations of the disease to varicella, variola, and other affections occurring in epidemic visitations have attracted the attention of many observers. The disease is one peculiarly prone to attack children and those in the humbler grades of life.

The eruption often occurs during convalescence from a more or less actively contagious disease. The antecedence of some fever in many cases is admitted by all observers. Duhring and Fox have seen it follow vaccinia, and the former admits that some connection between the two seems probable. It may occur typically in a series of children, each of whom is convalescent from varicella.

Pathology.—The lesions have been examined microscopically by Bockhart and others, who have thus been able to establish clearly the coccigenous origin of the disorder. Plainly, each lesion is but a distinctly circumscribed and superficial pea- to bean-sized abscess, situated between the intact corneous and the prickle-layers of the skin. Balzer and Griffon¹ agree with Thibierge and Bezançon in asserting that almost without exception the lesions of impetigo and ecthyma contain streptococci and no staphylococci. In some cases, however, the staphylococcus pyogenes aureus and albus are present. Larier and other French dermatologists describe an *impetigo strepto-coccigenata circinata*, in which the lesions closely resemble those of herpes iris, and in which the strep-

¹ La Presse méd., 1897, 89, p. 130.

tococcus only is found. Leroux and others, recognizing the fact that many micro-organisms similar in external appearance have decidedly differing potentialities, have suggested that the streptococci responsible for the several clinical pictures of impetigo may differ in effect.

In Unna's differential diagnosis of the impetigo- and eczema-pustule stress is laid upon the sero-purulent character of the contents of the latter, the dissemination of cocci throughout the lesion, the softening of the corneous layer in places, and the occurrence of morococci free and within the leucocytes. In impetigo the staphylococci are clustered, are extracellular, are relatively small, and are clustered beneath the intact roof-wall of the lesion.

Dewèvre¹ reports a number of successful inoculations and auto-inoculations practised with the contents of the vesico-pustule, with finely powdered impetiginous crusts, and with the products of scraping the subjacent erosion. In 1884 one of us succeeded in producing an almost typical vesico-pustule upon the left forearm by inoculation (all due precautions being observed) with the moistened débris of crusts. This inoculation was done in the clinic, the crusts being taken from typical lesions upon the face of a young girl inoculated while under observation from the lesions of exactly similar character on the face of her twin sister. The lesions on the forearm produced a characteristic crust which in seven days was also used for inoculation of two students then present at the clinic, in one of whom there was no result, and in the other an abortive lesion.

The disease is contagious, and its lesions inoculable and auto-inoculable, whether as a coccogenous or hyphogenous process.

Diagnosis.—To establish the identity of this affection it is necessary to define its exact differences from eczema pustulosum. These differences are: first, the absence of infiltration of the tissues affected; second, the absence of itching; third, the failure of the lesions to form patches; fourth, the isolation and wide separation from one another of lesions distinctly pustular; fifth, the large development and rather persistent character of the pustules; sixth, the evident termination of the disease, which does not, as does eczema in many cases, progress to form a freely discharging and crusting surface, the pustular being but the initial stage of a distinct morbid process. Manifestly, however, an impetigo of the sort described is not incompatible with an eczema which is often originated by less irritating causes.

In ecthyma the pustules are in appearance much more formidable than those of impetigo in consequence of their size, depth, inflammatory base, areola, flat hard bulky crust, and erosive action upon the skin.

In varicella the lesions are small, much more widely distributed over the body, and are vesicular only, rarely bullous. In pemphigus and herpes iris the seat, character, and period of evolution of the lesions suffice to establish the diagnosis.

Treatment.—Individual pustules are to be opened with an aseptic comedo-needle; the purulent contents gently removed by washing with borated water; and the floor smeared with any mild ointment, such as

¹ Arch. de Méd. et de Pharm. mil., Sept. 16, 1885.

5 grains to $\frac{1}{2}$ scruple (0.33–0.66) of ammoniated mercury to the ounce (32.) of cold-cream salve, or bismuth subnitrate $\frac{1}{2}$ drachm (2.) to the ounce (32.), or benzoated zinc salve. Van Harlingen recommends the application of a salve on bits of muslin, covering the whole with waxed paper. A dusting-powder containing calomel may be substituted for the salve or be employed afterward. The disease tends to spontaneous recovery if the lesions be not irritated. When they are situated within reach of a child's tongue which is constantly thrust out to moisten them, they may linger obstinately and require protection by flexile collodion.

ECTHYMA.

(Gr. *ἐκθύμα*, a pustule; *ἐκθύω*, I burn out.)

(*Ger.*, EITERPUSTELN.)

The term "ecthyma," like several of the titles of chapters immediately preceding, no longer points to a distinct disease. It represents rather a tolerably definite group of symptoms readily separable clinically from other affections produced by different causes. The most common cause is infection of the skin of the lower extremities with pus-cocci after scratching; then follow traumatism, primary and secondary, associated with pediculi of the body (*pediculus vestimenti*), and combinations of these with bedbug-bites; general filthiness of the person and clothing of body and bed; and the cachexia of most patients in these conditions. The term ecthyma is, however, not to be discarded, as it suggests to the mind not merely these composite etiological factors, but the picture in the skin produced as a result.

The disease is characterized by the occurrence of one or of several minute vesicles filled with clear serum, which soon become changed to circumscribed, yellowish-gray, reddish or dark-livid, roundish, bean- to filbert-sized pustules, which are the result of a distinctly circumscribed inflammatory process, limited to the base of each lesion or extending from it at the periphery in a diminishing hyperæmia. This process is distinguished by the formation at the base of the pustule of an indurated phlegmon, which is converted into a loss of tissue involving in mild cases the superficial, in severe grades the deeper, portions of the corium. The purulent or sanguinolent contents of the lesions dry in dark-colored, thick, rough, adherent crusts, the color being somewhat dependent upon the quantity of blood with which they are commingled. On removal of this concretion a minute, shallow, circular pit is discovered, invading the true skin to various depths, and lined with a tenacious, puriform, and often blood-stained product. When carefully wiped clean this solution of continuity, which really constitutes a minute ulcer, is seen to have a floor reddish or grayish in color and indolently granulating. Both superficial and deep-seated types of the disease are recognized with a single ulcer or exceedingly numerous areas of ulceration resulting.

The pustules may be acutely or indolently developed, and, when multiple, be coincident or successive. They occasion rather a sensation of heat, burning, and pain than of itching, the latter being usually more distinct when the lesions are healing under their crusts. Their formation may be preceded by mild general pyrexia. They occur at all ages and in both sexes, usually upon the extremities, and also upon every portion of the body.

The deeper lesions are followed by persistent punctate or larger cicatrices. The entire course of the disease occupies about two weeks. The subjective phenomena are a sense of heat, burning, pain, and soreness. There may be accompanying lymphangitis or adenopathy.

Etiology.—The pyogenic cocci (in particular streptococci) are the efficient causes of most of the lesions; practically the agents capable of producing eczema and dermatitis (traumatism, heat, scratching, parasites, etc.) either effectively operate or influence to a morbid degree the subjects of other diseases, such as anæmia, asthenia, struma, variola-convalescence, and menstrual disorders. Filth and neglect are most common aggravations; in other words, that circumscribed cutaneous ulcer will be the angrier and the deeper which occurs in the victim of any depressing disease whose skin is scratched with nails begrimed with dirt, and is covered with the products of the excretory processes. The pus thus produced is in various degrees inoculable and auto-inoculable, as is the product of many inflammatory processes of similar grade.

Pathology.—In many cases of ecthyma there has been demonstrated a streptococcic infection of the skin, usually with but few chains of micro-organisms visible on bacteriological examination. The pustule of the disease differs from the pustule of eczema or the pustule of impetigo in the severity of the exudative process by which it is produced, and in its limitation to the exact seat of external irritation. By the extension of that process to the corium there is an actual loss of some of the elements constituting the papillary layer, the result often being a cicatrix which contracts as it grows older, and which is, in milder cases, finally barely visible as a minute cicatriform punctum. One who frequently examines the skin of the entire body with care can usually detect the ancient sites of these lesions by their indelible though insignificant relics.

According to Unna, the ecthyma-pustule, as distinguished from that of impetigo, is less an epidermal abscess than a result of epidermal inflammation, fibrinous at the centre and exceedingly œdematous at the periphery. The crust contains fibrin and epidermal layers.

Sabouraud points out that the original streptococcic infection is often succeeded by a secondary microbial involvement whereby the staphylococci present are enabled to produce the peripheral lesions of impetigo, furunculosis, etc.

Diagnosis.—Ecthyma is liable to be confounded with the other pustule-producing exudative affections, but as the distinction between them is largely artificial and based upon the severity of the inflammatory process, there is small danger in consequence. Kaposi expresses

the truth in his suggestion that there can be but little objection to the employment of the term *ecthyma* when it is desired to characterize precisely the pustular grade of any cutaneous inflammation at a given time. The pustules of *variola* are "ecthymaform," and many of those seen in syphilis exhibit similar characters; but the history of the general affection should throw light upon the identity of the cutaneous disease. In syphilis, moreover, the ulceration at the base of the lesion exhibits the pronounced features of the syphilitic ulcer in its secretion, floor, edges, base, crust, and career. The crust, in particular, of the flat pustular syphiloderm has the rupioid conical appearance which suggests the shell of the oyster, and the underlying ulcer is larger and deeper than in *ecthyma*. In the *furuncle* there is usually a central core; in *impetigo* the pustules are not deep-seated, and there is no ulceration at the base; the crust is superficial, yellowish, firmly adherent, and the lesions are more numerous.

Treatment.—The general treatment of patients affected with *ecthyma* is a matter of importance. A proper regulation of the food and hygienic surroundings is not to be neglected. Tonics are frequently indispensable, including iron, quinine, and strychnine. The destruction of any pediculi and the cleansing of the skin with soap and water will often be sufficient to effect a great change. This fact is well illustrated in hospital practice, where young patients rapidly improve after a bath, followed by inunction with vaselin, and a few substantial meals of a nutritious character. When the lesions are abundant the treatment is in general that of pustular *eczema*. Crusts are to be removed after soakings with oil or fat; and the floors of the former pustules, after washing with carbolated water, should be dressed with an ointment containing from 10 to 15 grains (0.666–1.) of mercuric ammonio-chloride to the ounce (32.) of lard. If the minute basal ulcers are sluggish, they may, after careful cleansing, be touched with a small swab that has been dipped in a 0.5 per cent. formalin solution or in a solution of mercuric chloride in tincture of benzoin, 1 grain (0.066) to the ounce (32.). Carbolic or boric acid or iodoform may be employed for the same purpose. For the salve mentioned above may be substituted one containing 10 grains (0.66) of calomel, or $\frac{1}{2}$ drachm (2.) of bismuth subnitrate to the ounce of salve-basis.

In every case of the disease it is desirable to inquire whether any medicines have been ingested prior to the appearance of the eruption, since these may be responsible for the lesions.

The **Prognosis** is always favorable.

CONGLOMERATIVE PUSTULAR PERIFOLLICULITIS.

Leloir¹ gave this name to an eruption which he described as appearing on the backs of the hands and buttocks and occasionally on other parts of the body.

The disease begins by the appearance of a round or oval, somewhat elevated, reddened or purplish plaque, with definite outlines. The

¹ *Annal. de Derm. et de Syph.*, 1884, vol. v., p. 437, with plates.

plaque may be no larger than a dime, or it may be of the size of a large coin or larger, and may be elevated a quarter of an inch above the general level of the skin. Its surface is smooth or mammillated and is perforated by numerous follicular openings from which pus or dried plugs resembling comedones may be expressed. The openings of some of the follicles may be covered by unruptured pustules. Later, the patch becomes more phlegmonous, fluctuation can be detected, the follicles are more patulous, and pus in large quantity can be expressed. The whole then has much the appearance of a kerion of the scalp or of a flat carbuncle.

There is usually but one such plaque, though there may be two or three, rarely more. Subjective sensations are slight, though there is usually some itching and burning. There is no systemic disturbance. The disease runs a rapid course, requiring about a week in which to develop, after which it remains stationary for a week or two, and then disappears under appropriate treatment in from ten to fifteen days. More or less deep pigmentation remains some time after the lesions heal, but there is no ulceration and in the few cases in which scars are left they are usually very superficial.

FOLLICULITIS AND PERIFOLLICULITIS.—Quinquaud and Pallier¹ describe a follicular disease which is chronic, becomes papillomatous, and is very stubborn under treatment. Besnier and Doyon² enumerate, in all, five varieties of the disease, including two pseudo-ulcerative, serpiginous, and virulent forms which resemble anatomical tubercle.

Etiology.—These disorders are probably due to contagion, and are seen most frequently in those who work among horses and other animals.

Pathology.—The process is an inflammation of the follicles, perifollicular tissues, and sebaceous glands. Leloir found several forms of micrococci and zoöglæa in the pus, but he failed to reproduce the disease by inoculation-experiments. Quinquaud and Pallier believe the active agent to be the staphylococcus pyogenes albus, which accidentally obtains entrance to the follicles and glands. Sabouraud found in several cases a large-spored trichophyton.

Treatment.—The treatment is purely local. In the usual milder forms daily evacuation of pus, hot boric-acid fomentations, or frequent hot bathing, with antiseptic dressings, constitute the only treatment necessary. In stubborn forms stimulating treatment by means of strong solutions of silver nitrate or of carbolic acid, or by means of the actual cautery, may be indicated. Occasionally it will be necessary to remove the growth with a curette.

¹ "Des périfolliculites suppurées agminées en placards." Thèse de Paris, 1889.

² Kaposi: Besnier-Doyon, ed. 1892, vol. i., p. 795.

HERPES SIMPLEX.(Gr. *ἔρπειν*, to creep.)

(Fr., DARTRE; Ger., BLASCHENFLECHTE.)

The term "herpes" is responsible for much of the confusion which has existed with respect to cutaneous diseases. By the ancients it was employed, as its etymology suggests, to designate a disease creeping or extending gradually over the surface or within the substance of the skin. By several more modern authors the term is employed in a generic sense in a futile attempt to distinguish a series of so-called "herpetic diseases," and even herpetic diatheses from those of a different complexion. The significance which attaches to the word in the minds of dermatological authors of to-day is exceedingly simple, and is limited to the conditions described in the following paragraphs. Herpes zoster, though closely related to other types of herpes, is recognized as a distinct disease, and in this work is considered separately.

Symptoms.—The disease is declared by the occurrence of millet-seed- to coffee-bean-sized vesicles (single or relatively few in number, and in the latter case grouped), which may be preceded or accompanied by a general febrile process, though in many cases there is no constitutional disturbance. The vesicles are usually displayed symmetrically, are short-lived, surviving but for a few hours, and are filled with a clear serous fluid which may become lactescent. After accidental or spontaneous rupture there is left a slightly tumid superficial excoriation, which is covered frequently by a light crust and at times is characterized by circumscribed hyperæmia, slight infiltration, or œdema of the base and periphery. The lesions rarely persist for more than a few days, and leave no permanent pigmentation or scar, unless complicated by pus-infection. The subjective sensations are not usually severe; they include moderate pain, itching, and heat.

Herpes Facialis, Herpes Febrilis, Herpes Labialis, "Cold-sores."—About the lips, the mouth, the cheeks, and the alæ of the nose, more rarely upon other portions of the face, lesions occur singly or in groups, possessing the characters described above. Their occurrence is usually sudden. Their frequency about the lips has suggested one of the titles under which they are most often described by authors. The tongue, the buccal membrane, the palate, and the larynx may participate in the morbid process; the lesions in such moist situations being represented by isolated or by grouped dark-grayish patches of epithelium that are sensitive and exfoliate. The functions of the mouth in articulation and mastication are thus rendered painful. Often the lesions coalesce, forming in an irregular line of elevated epidermis a pea-sized bleb, spread along the vermilion border of the lip and distended with clear serum. The burning and itching sensations which accompany the lesions are often marked and distressing. In the course of two or three days thin crusts form, the exfoliation of which terminates the disorder. The disease is common in acute pneumonia and in malarial and enteric fevers. In these cases, as Kaposi has shown, the occurrence of the eruption by

no means augurs favorably in every instance, as, nevertheless, a fatal result may follow. The connection between labial herpes and rigors has long been recognized, though particular attention has been directed to this relation by Hutchinson and Symonds. Trophic disturbances, traumatism, exposure to solar heat, unusual fatigue, a simple coryza, exposure to a draught of cold air, and temporary gastric disorders may suffice to induce the disease. There are patients who can produce the lesions at will by tickling the lips with a feather, and in some individuals there is an exquisite susceptibility to the disease. The disorder is always short-lived though often recurrent, and the superficial crusts which terminate the process are never followed by scars. Symmers, of Aberdeen, successfully cultivated a rod- or thread-shaped micro-organism (solid, filamentous, and without septa) obtained from the lymph in vesicles of herpes labialis.

Labial herpes should not be confounded with the symptoms of *La Perlèche*, described on another page. The disease to which the last name has been given in France is due to a parasite.

Epidemic Herpetic Fever, which has been observed by Savage¹ and others, has prevailed in institutions in which young subjects are congregated. There are usually rigor, high fever, a coated tongue, adenopathy, and a vesicular rash over the face.

The **Generalized Herpes** of French authors has been rarely seen in this country.

Herpes Progenitalis (HERPES GENITALIS, HERPES PRÆPUTIALIS) is characterized by the appearance of one or a group of transitory vesicles, in men on the inner face of the prepuce, especially upon its upper limb, on the glans, on the balano-preputial sulcus, or in the adjacent integument; in women, on the hood of the clitoris, the labia minora, the inner face of the labia majora, or adjacent surfaces even as far removed as the buttocks.

The disorder is seen most frequently in young adults and in early middle life, its occurrence after the age of fifty being unusual. There is commonly a precedent pruritus or a sensation of heat, sometimes very considerable pain, followed by the appearance of one or of several pinhead-sized vesicles seated upon a tumid and hyperæmic base. Within the preputial sac the lesions may either rupture at an early moment or assume the features above described as presented upon the mucous membrane of the mouth. The resulting œdema of the prepuce is often displayed in an annular tumefaction encircling the glans, while the labia minora perceptibly project from the general vulvar plane. In these localities the floors of ruptured vesicles are particularly liable to be irritated (coitus, caustic, etc.), and then pus and even blood may be exuded with much angrier excoriation and the resulting crusts be of darker shade. In the course of a few days even these crusts fall, and the disease is at an end. Successive crops of vesicles, however, may prolong the disorder for several weeks. Recurrence is common.

¹ Jour. Cutan. and Ven. Dis., 1883, p. 253.

Rarely, a first attack of herpes in man results in an extraordinary sensitiveness of the balano-preputial membrane that persists for more than a year. The patients are often middle-aged men, married, and virgin as to venereal antecedents. The membrane becomes tumid, tense, slightly glazed, and dark red to dark purple in hue. Upon any undue sliding of the prepuce over the glans there occurs a very superficial fissure, whence a drop of serum oozes. The membrane becomes so sensitive that the passage of the finger over it is resented as though the conjunctiva had been touched. Unusual friction by the clothing or the use of a stimulating lotion is followed by intense pain and aggravation of symptoms, and the price of coitus is several days' rest in bed.

Naturally, the diagnosis of herpes progenitalis is between chancroid and chancre. The latter will be manifested by its induration, its period of incubation, and its characteristic inguinal adenopathy. The chancroid, whether in pustular form or as an inoculated abrasion, is *ab origine* ulcerative in tendency, capable of auto-inoculation, and often accompanied by sympathetic, inflammatory, or virulent bubo of one side. Balanitis, with its puriform secretion and superficial patches of reddened epithelium, is readily distinguished from herpes progenitalis by its symptoms, though the two disorders frequently coexist.

The practitioner should never forget that the patient who exhibits a herpes of the genital region to-day may have been inoculated at the site of the lesion, which to-morrow or later may take on the chancrous modification. The rule to be followed, then, is very simple. No individual with progenital herpes can be assured of immunity against syphilis until the longest period of incubation of the syphilitic chancre has elapsed since the date of the last suspected exposure.

Herpes progenitalis is almost universally the result of naturally or unnaturally induced sexual erethism or of congestion of the genitals from other causes. Its occurrence in an individual virgin as to such antecedents may be due to the causes efficient in the production of herpes facialis. In unusually sensitive persons it may be associated with dyspepsia, constipation, and the phenomena of the gouty state. It may follow any of the venereal diseases; or may be induced simply by filth. Though relatively rare in chaste women, it is of common occurrence in prostitutes. In some women it frequently accompanies menstruation (HERPES MENSTRUALIS).

Diday and Doyon¹ believe that true herpes of the genital region is always of recurrent type, and well marked by its special course, career, and consequences. All others of a false type are divided by them into: (1) an irritative form, seen in women as the result of vaginal discharges, sexual irritation, etc.; (2) a pseudo-membranous or diphtheroid form, also occurring for the most part in women, presenting vesicular and even bullous lesions the rupture of which is the signal for pseudo-membranous transformation; and (3) a neuralgic form, which is merely zoster of the genital region.

Pathology.—The eruptive phenomena are due to irritation of the nerves either directly or through reflex excitation. There is in many

¹ Les Herpès génitaux. Paris, 1886.

(probably in all) cases a localized peripheral neuritis of brief duration, involving the superficial nerves. According to Unna, there is a coagulation-necrosis of the upper prickle-layer. The epithelial elements lose their capacity for receiving stains, and undergo a fibrinous transformation by imbibition of a fibrinogenous material from the surrounding media. This coagulated mass is readily loosened from the papillæ and pushed out by the exudate to form a bleb, the roof of which is thus constituted of the necrotic epidermal layer and the walls of deeper layers which have undergone the same change.

Treatment.—The milder forms of herpes occurring about the lips and the genitalia require the simplest treatment. Sponging with pure water as hot as can comfortably be tolerated is best followed by local use of a weak lead-lotion, a simple dusting-powder, or a zinc salve. Alcohol applied locally will sometimes abort the disease. Duhring recommends highly the following :

R	Zinc. sulphat., }	āā	Ḑj-3j;	1.33-4	
	Potass. sulphid., }				
	Alcohol., }		3j;	4	
	Aquæ dest., }		3vij;	28	M.
Sig.	Shake and apply freely and frequently.				

Blenler states that a 1 per cent. ointment of cocaïne gives prompt relief and shortens the course of the disease. About the lips it is well to protect the lesions with flexile collodion or isinglass plaster. Occurring upon the genital region, the lesions are to be protected by the interposition of a pledget of lint, or a borated or salicylated dusting-powder. As a rule, ointments are unsuited for the moist mucous surface of the genitals, the malodorous emanations from most diseases of such parts being retained by all grease-containing compounds. Lotions answer far better, and they may be made stimulant with alcohol; astringent with tannin, zinc sulphate, or cupric sulphate; anodyne with opium or cocaïne; and antiseptic with formalin, carbolic acid, or corrosive sublimate. Prophylaxis by the local use of aromatic wine, or tannin and brandy, with a sexual hygiene that will prevent congestion of the genitals is a matter of importance. Arsenic is often of value in preventing recurrences of herpes simplex.

HERPES ZOSTER.

(Gr. ζωστήρ, a girdle; Lat. *cingulum*, a girdle.)

(SHINGLES, ZONA, ZOSTER, IGNIS SACER, HEMIZONA.
Ger., FEUERGUERTEL.)

Symptoms.—The eruption in this affection is usually preceded, for a period lasting from a few hours to days and even weeks, by hyperæsthesia and neuralgic sensations of moderate or of severe intensity. These sensations are usually limited to the area of the integument subsequently or coincidently displaying cutaneous lesions; but there are exceptions to this rule, as the pains are at times experienced elsewhere. Often, though limited to the region about to be attacked, the pain

occurs where it is experienced in other neuralgias, at the points indicated by Romberg as corresponding with regions in which cutaneous branches are given off by the nerve-trunks. There may be mild constitutional disturbance in the form of malaise or febrile symptoms. Adenopathy occurs frequently in the neighborhood of the eruption, and may be generalized.

The lesions of zoster are arranged in from two to a dozen or more irregularly shaped groups, commonly along the cutaneous distribution of a single nerve. These groups are separated by areas of normal integument, show little tendency to coalesce, and may be widely scattered. Aside from the few exceptions which prove the rule, zoster occurs but once in the lifetime of an individual, and is limited to one side of the body.

According to Fabre, the essential lesion, always present even when vesicles are not seen, is the first macular efflorescence of the disease that appears in the form of brilliant or dull-red, poorly defined, erythematous macules, groups of which appear in the tract supplied by the affected nerve. As the patient rarely presents himself for treatment until after the appearance of vesicles, the macules usually escape observation, either having disappeared or being overlooked. The vesicles, which are generally regarded as more characteristic of the disease, appear afterward in from a few hours to a day or more, spring from the macules or from the normal skin, and are accompanied by a sensation of heat. These typically perfect, isolated vesicles vary in size from that of a rape-seed to that of a coffee-bean. They appear in successive groups of from eight to a dozen or more, which gradually increase in size and attain maturity simultaneously in from three to seven days.

The lesions, when fully developed, project well from the widely hyperæmic base from which they spring, are tense from complete distention, and have no tendency to spontaneous rupture so firm is their roof-wall. Later their early limpid contents become lactescent or puriform in character. When abundant the vesicles may coalesce and form irregular patches. Involution is accomplished by desiccation and the formation of a yellowish-brown crust, which falls in from seven to ten days after the first appearance of the vesicle. New groups appear during a period usually of from six to twelve days, at the end of which time vesicles may be seen in all stages of development and involution. The average duration of the disease is from ten days to three weeks. Exceptionally, a succession of new lesions may prolong the disease for a month or more.

Disappearance of the vesicles and crusts is followed often by pigmentation, which may persist for weeks or months. Scarring occurs in some cases, especially if the vesicles have been ruptured and exposed to pus-infection. The scars left by zoster are characteristic. Not only are they limited to the original seat of the disease, but they have also a peculiar indented look, as if made by a nail-set and hammer. They are angular in outline, and do not exhibit the dead-white color of many cicatrices.

The pain or hyperæsthesia of zoster varies greatly in intensity and

in duration. It is usually mild, but may be very severe, especially in old people. It disappears commonly with, or soon after, the appearance of the eruption, but may persist for months or even for years.

Zoster occurs chiefly in the upper part of the body, and, though limited to one side, this limitation is rarely observed exactly at the median vertical line, as a few lesions can usually be seen extending beyond this boundary.

Atypical forms of zoster are seen occasionally. The vesicles may be typical and few in number, possibly limited to a single group, or they may be abortive and transitory. Papules or vesico-papules may be the sole lesions. The vesicles may become transformed into pustules or bullæ, or be filled with blood from capillary hemorrhage, producing bluish or blackish lesions, known as ZOSTER HÆMORRHAGICUS, or "black herpes." In severe cases there may be ulceration and gangrenous or deep-seated phlegmonous inflammation. Keloid-like scars occur rarely.

Recurrent zoster¹ is rare, but a number of cases are reported in which an individual had two or more attacks either in the same or in different regions of the body. In many of the cases reported, however, the recurrent lesions were not typical of true zoster.

Zoster of simultaneous occurrence on two sides of the body may be symmetrical or asymmetrical of development. The disease in either form is exceedingly rare. In our experience the anomaly is generally the result of herpes either in a syphilitic subject or in one under the influence of arsenic. T. C. Fox² reports a symmetrical case in an infant of five months.

The eruption may occur over the terminal filaments of nerves which have no communicating branches, unless, as suggested by Blaschko,³ there be an interlacing of fibres in the spinal cord.

Anomalous nervous symptoms are: persistence of neuralgia after involution of the cutaneous lesions; neuralgia of an intense and intolerable severity at any period of the disease; painful anæsthesia of the skin; paretic and paralytic phenomena with resulting muscular atrophy; and, in zoster of the head, keratitis and iritis, complete destruction of the ocular globe, and falling of teeth and hair.

According to the regions involved the following types of zoster are generally recognized:

ZOSTER CAPILLITII depends upon involvement of the second branch of the fifth pair of nerves, and its lesions occupy the anterior and posterior portions of the scalp.

ZOSTER FRONTALIS occurs in the area supplied by the supra-orbital nerve, which springs from the first branch of the trigeminus. Its lesions extend from the upper eyelid to the vertex, and spread in a fan-shaped figure over one-half of the brow, forehead, and scalp.

ZOSTER OPHTHALMICUS may be a severe and dangerous manifesta-

¹ For a *résumé* of the literature cf. "Recurrent Zoster," by Joseph Grindon. *Jour. Cutan. and Gen.-Urin. Dis.*, May, 1895.

² *Brit. Jour. of Derm.*, 1898, p. 252.

³ *Monatsh. für prakt. Derm.*, August 15, 1898.

tion of the disease, being often complicated by agonizing neuralgia, formidable involvement of all parts of the eye, even resulting in panophthalmia, ulcerative keratitis, pyæmia, meningitis, and death. Typical cases of zoster of this region may not, however, exhibit a single untoward symptom of the disease.

ZOSTER FACIALIS depends upon involvement of the sensory nerve-fibres of the trigeminus distributed to the face, its lesions being displayed over one cheek, the side of the nose, the half of the lip or of the chin. The facial and seventh nerves may chiefly be affected. Care must be taken in cases of this variety not to confound the disease upon the nose with acne or with painful tertiary syphilitic lesions, errors in diagnosis that have occurred. When the lower jaw is involved there may be severe toothache, dysphagia, and fall of the teeth, with great resulting deformity.

ZOSTER NUCHÆ, seu COLLARIS, occupies the region extending forward from the cervical vertebræ to the clavicle, or upward toward the occipital region and the auricle.

ZOSTER BRACHIALIS occupies the region from the last cervical and first dorsal vertebræ over the supra-spinous scapular region and the contiguous portions of the upper arm. Rarely, even the skin of the fingers and that over the first and second ribs are involved. It is a common and usually a mild form of the disease, and is characterized by a peculiar isolation of the vesicular groups. It occurs also with lesions of exclusively brachial distribution. Thomson, of London, reports brachial zoster with involvement of the right internal cutaneous nerve in which two groups of vesicles appeared in the palm of the hand.

ZOSTER PECTORALIS is the most frequent form of the disease, from which the common name "shingles" originated. The eruption occurs below the first dorsal vertebra, covers the skin of the thorax as far as the lumbar vertebræ, and extends from the spinal column behind to the sternal region in front. Two, three, or more of the intercostal nerves in this region are commonly involved, and the neuralgia resulting has frequently been mistaken for the pain of pleurisy. Children more often display this form than any other variety of zoster.

ZOSTER ABDOMINALIS.—The area here involved extends from the lumbar vertebræ to the median line of the abdomen. Zoster abdominalis is usually much less pronounced in its features, and the exanthem is less abundant, than in the variety of the disease just described. When constipation exists defecation may be attended with considerable pain.

ZOSTER FEMORALIS covers the buttocks and sacrum, and extends along the thighs, sweeping from behind forward and from above downward as far as the popliteal space; in some cases involving the leg and foot. The penis, the scrotum, the labia, the vestibulum vaginæ, and the anus may then exhibit unilaterally arranged vesicles. As this is a relatively rare manifestation of the disease, the diagnostician will do well to recall the possibilities in every case of an exanthem limited to one side of the perineum, supposed to be the seat of genital eczema.

Etiology.—Herpes zoster occurs in both sexes, and in the young as well as in the old, though it is rarely seen in infants. It shows a tendency to increase in severity with the age of the patient, especially after middle-life. It is influenced by the seasons, as cold and damp weather serves to increase its frequency in those susceptible to it. Frequently there is a history of recent exposure of the involved region to a draught of cold air. A large list of other depressing agencies are named as effective in the production of zoster. Among them are certain poisons (carbon dioxide, belladonna, and atropine), pyæmia, carcinoma, fever, measles, pulmonary inflammations (including phthisis), septicæmia, hemorrhages, traumatism, and malaria. It has also followed vaccination, the passage of electrical currents, the extraction of teeth, an accidental prick by a thorn, the tapping of hydatids, and gunshot wounds of the body. Inasmuch as no one of these causes can be cited as certainly effective in all cases, it can merely be said that any influence sufficient to induce inflammation of a sensory nerve or its ganglion may be followed by the objective signs of the disease. Cases are on record in which zoster followed a prolonged course of arsenic. Occasionally zoster occurs in epidemics, or coexists with other epidemic disorders, such as influenza. The evidences of direct contagion in a few instances are very strong. These facts, and the rarity with which zoster recurs in the same individual, together with the adenopathy which is often present from the beginning of an attack, favor the growing belief that zoster is, in some instances at least, an infectious disease.¹

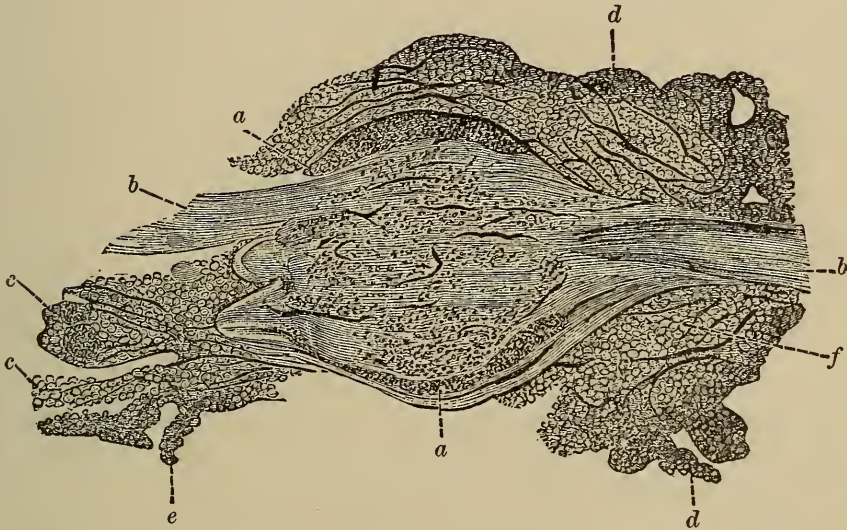
Pathology.—In some cases there is unmistakable evidence of a descending interstitial neuritis, but the affection may be associated with irritative action in any portion of the nervous tract from central to peripheral limit. The researches of Bärensprung, Rayer, Wagner, Charcot, Kaposi, and others have demonstrated with sufficient clearness that in zoster there are always, at some point in the corresponding nervous tract (cerebral or spinal centres, ganglia, or the nerves themselves), pathological changes. In the majority of cases in which a pathological lesion is demonstrated there is found an interstitial neuritis of the posterior ganglion or of the posterior spinal root, but neuritis and perineuritis of the peripheral nerves, without change in the more centrally situated parts of the nervous system, are reported by competent observers. In a number of cases multiple neuromata have been discovered along the affected nerve, the spinal cord and ganglia remaining normal. In other instances the irritation of the nerve-tract has been due to hemorrhage, degeneration, or pressure from tumors, etc. Reflex irritation seems to have been an effective cause in a few cases.

According to Biesiadecki and Haight, the cutaneous lesions originate in the deeper portions of the rete, precisely as in other vesicular diseases. The exudate from the hyperæmic corium, especially its papillary layer, presses upward into the rete, the epithelia of which are thus separated and vertically elongated, the lacunæ between them,

¹ Hay presents an excellent argument in favor of the infectiousness of zoster, and gives references to literature on the subject in *Jour. Cutan. and Gen.-Urin. Dis.*, 1898, p. 1.

being distended with serum and a few round cells. Often the vesicles form about the hair-sacs. As the exudation increases the rete-cells are progressively separated, and finally are discovered free in the exuded fluid, though some, in changed form but still united to each other, may be found in the upper part of the vesicle. Except at the margin, the mucous and horny layers are separated by the exudation. At first many-chambered with delicate easily ruptured partitions, the vesicle represents finally a single chamber filled with serum containing rete-cells and a few pus-cells, the latter increasing in number as the vesicle

FIG. 47.



Longitudinal section of the third spinal ganglion of the right lumbar region from a case of lumbo-inguinal zoster: *a, a*, ganglion (the black spots correspond with pigmented ganglion-cells; the dark lines with engorged vessels); *b, c, d, e*, fatty tissues surrounding the ganglion; *b, b*, nerve-filament divided longitudinally at the points of entrance and exit; *c, c*, nerve-filament divided perpendicularly. (After KAPOSI.)

changes its type. Its base at first rests upon the lower portion of the mucous layer; later, upon the corium itself, in which all signs of papillæ are absent. In the vicinity of the vesicle the papillæ and corium are infiltrated and the vessels are dilated, but these inflammatory changes do not extend far into the corium. The deep location of the vesicle, resting as it does upon the papillary layer, accounts for occasional destruction of the papillæ and consequent scarring.

The vesicle of zoster (and to a less degree that of variola and of varicella) is peculiar in that it contains in the deeper portion and along the walls epithelial cells which have undergone transformation into round or ovoid globular bodies, usually larger than the normal cells, which have apparently a limiting membrane or double-contoured wall, and contain from two to a dozen or more rounded bodies. These transformed epithelial cells have been described as protozoa, but their true nature has been demonstrated by Unna, Gilchrist,¹ and others. Other varied and extraordinary figures are seen. Among them are rings with fragmentary edges and swollen centres (the edge representing a homogenized and fibrinously degenerated protoplasm; the centre a homo-

¹ Johns Hopkins Hosp. Rep., 1896, vol. i.

genized nucleus). Elsewhere are thin and expanded shells filled with epithelial nuclei. Irregularly "ballooning" balls, baskets, tubes, hanging cords, and other odd forms take the place of the trabeculæ found in other vesicles. Unna names this peculiar change in the epithelial cells a "ballooning degeneration," to distinguish it from the reticulating forms.

Diagnosis.—The vesicles of herpes zoster are not rarely confounded with those of eczema; but the distinction between the two is always readily established. In eczema there is itching but no neuralgia; the vesicles tend to rupture spontaneously and never persist as they do in zoster; eczematous lesions are also smaller, more acuminate, and rarely distinctly limited to the lateral half of the body. Herpes simplex is frequently recurrent, herpes zoster almost never; herpes simplex is exceedingly liable to spread around the mucous outlets of the body, and on either side of the latter, while zoster reaches such regions only after extension from other parts, and is then almost invariably monolateral. Its lesions are, moreover, never grouped in the concentric circles of herpes iris.

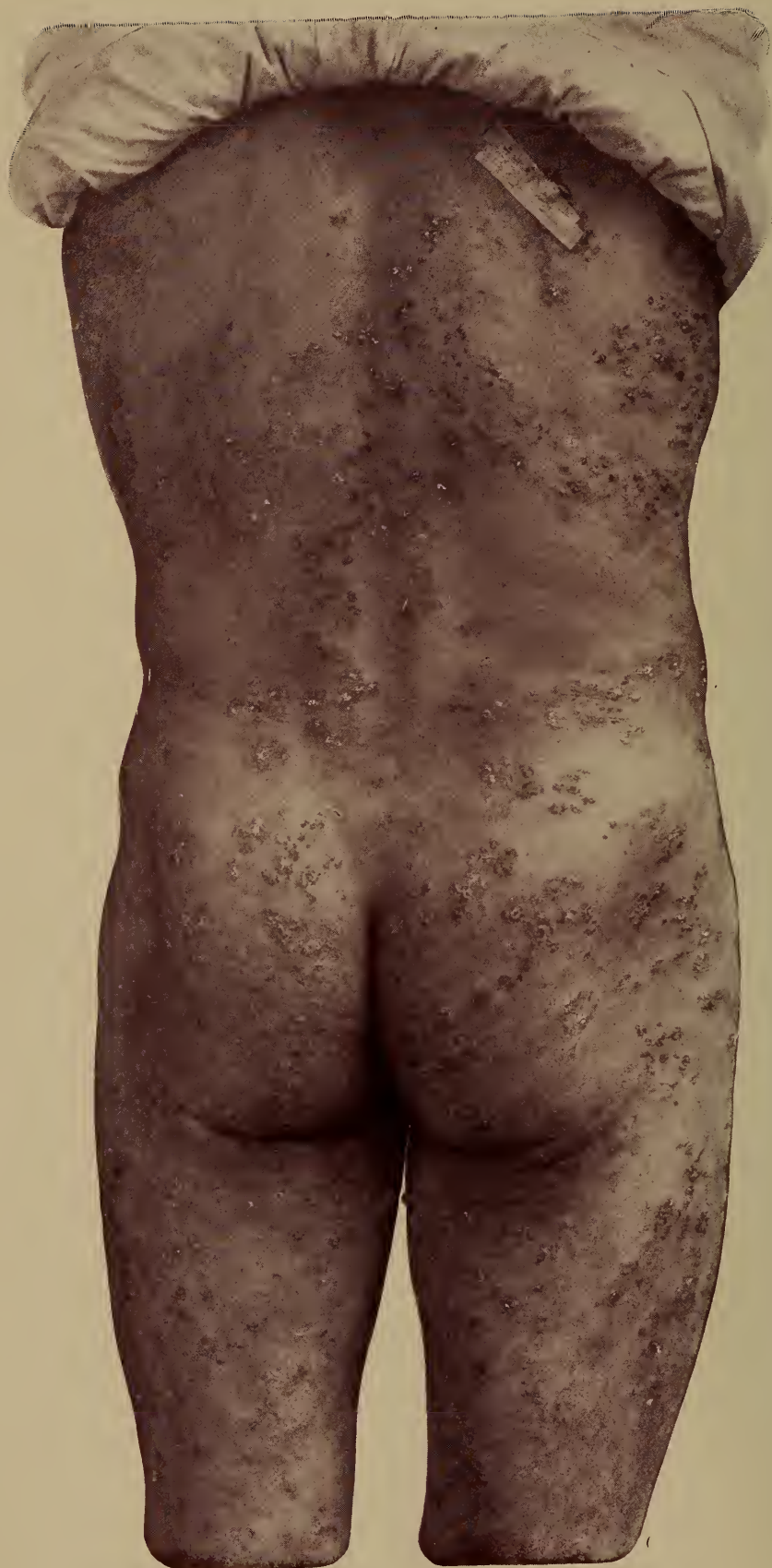
Treatment.—The purpose of local treatment of herpes zoster is to protect the vesicles from rupture and infection, and to relieve pain. These ends are best accomplished by thickly dusting the lesions with an anodyne powder, such as Anderson's powder, containing morphine sulphate, 2 grains (0.133) to the ounce (30.); lycopodium with powdered opium, orthoform and boric acid, or zinc stearate with acetanilid, etc. The vesicles may be punctured with an aseptic needle and the contents evacuated, but rupture of the lesions should not be permitted. Over the entire affected surface should be gently laid a sheet of soft lint or of antiseptic cotton, its meshes being also filled with the powder, and a bandage, when practicable, smoothly bound over the whole. In the milder cases nothing more than this treatment is needed from first to last. The glycojelatins furnish a convenient and effective dressing if the contents of the vesicles be first evacuated and the surface rendered as nearly aseptic as possible. In cases in which the lesions have ruptured and their bases have undergone erosive or ulcerative changes oleated lime-water with zinc oxide, belladonna, and opium or morphine should be applied, and be covered with Lister protective. Carbolated and anodyne ointments may also be used, especially toward the conclusion of the case. Bleuler¹ states that applications of 1 part of cocaine in 50 parts each of lanolin and vaselin not only relieve the pain but also shorten the duration of the disease.

Lotions of carbolic acid and glycerin (1 part to 6), or lead-water and laudanum, or the "lead-and-opium wash" may be employed. Van Harlingen recommends $\frac{1}{2}$ ounce (15.) each of precipitated zinc carbonate, powdered zinc oxide, powdered starch, and glycerin, shaken up in $\frac{1}{2}$ pint (240.) of water.

Duhring speaks well of collodion with morphine, in the strength of 10 grains (0.66) to the ounce (30.). Kaposi warns against the use of diachylon ointment. Generally, it may be said that ointments should be the last resort, but those containing from 10 to 20 grains

¹ Neurologisches Centralblatt, November 15, 1899.

PLATE III.



Dermatitis Herpetiformis.

(0.66–1.33) of the aqueous extract of opium or of belladonna to the ounce (30.), or a 5 per cent. cocaine salve, will at times give relief from pain. The oleate of cocaine and menthol have been used locally with great advantage in meeting the same indication. Alcohol; or resorcin 2 parts, alcohol 100 parts; or 1 per cent. alcoholic solutions of menthol or of thymol, may be useful when other measures fail, and it is claimed by some that these remedies will abort the disease if used early. A continuous galvanic current of between two and three milliampères may be applied over the root of the nerve two or three times daily for ten minutes at a sitting. Blistering or dry-cupping, or in sthenic cases wet-cupping, may be employed instead of electricity.

No remedy for internal use is known to have the power of aborting or of shortening an attack. Quinine is certainly indicated and does no harm, but quinine and strychnine in full doses have alike proved inefficacious. Other remedies employed are zinc phosphide in $\frac{1}{3}$ grain (0.022) doses, repeated every three hours, and, if indicated, in combination with $\frac{1}{6}$ (0.011) grain of the extract of *nux vomica*; arsenic (Kaposi); and the tonics in general. Anodynes, by mouth or by hypodermatic injection, are often indispensable. Inasmuch as many patients consider the attack a trivial matter, it is of some consequence that they be warned of the possibilities of the future, and that they be confined to an apartment of equable temperature in which they are not exposed to atmospheric changes. This measure is of special importance in the zoster of the face. A skilled oculist should be consulted in cases involving the eye.

Prognosis.—Zoster usually runs a benign and self-limited course. The prognosis in exceptional cases may be in the highest degree grave. Many severe cases have occurred in which patients, after years of intense suffering, have resumed the occupations of life, physical wrecks of their former selves, their faces indented with scars, and the vision of one eye impaired or ruined. Rarely the termination is fatal.

DERMATITIS HERPETIFORMIS.

Dermatitis herpetiformis is a malady which, in one form or another and under different titles, has long been recognized and described. The credit, however, of clearly establishing its identity, and of recognizing one process as differently expressed in the several observations of others, is largely due to Duhring, of Philadelphia.¹

The identity of the disease as a special pathological process has only lately been established. Much investigation is yet required before settling definitely many of the interesting questions it presents for consideration. Duhring regards its vesicular and bullous forms as iden-

¹ "Dermatitis Herpetiformis; its Relations to So-called Impetigo Herpetiformis." Amer. Jour. Med. Sci., October, 1884. "Dermatitis Herpetiformis; Case of, Caused by Nervous Shock," etc. Ibid., January, 1885. "Case of Dermatitis Herpetiformis, Illustrating the Pustular Variety of the Disease." Jour. Cutan. and Ven. Dis., vol. i., No. 8. "Case of Dermatitis Herpetiformis with Peculiar Gelatinous Lesions." Med. News, March 7, 1885. "Notes of a Case of Dermatitis Herpetiformis," etc. N. Y. Med. Jour., November, 1884. "A Case of Dermatitis Herpetiformis (Bullosa)." Ibid., July, 1884. Cf. Duhring, p. 436.

tical with "herpes circinatus bullosus" (E. Wilson); "pemphigus prurigineux" (Hardy); "herpes gestationis" (Milton, Bulkley, and others); "pemphigus" (Klein); "pemphigus circinatus" (Rayer); "herpes phlyctænoïdes" (Gibert); "pemphigus aigu prurigineux" (Chausit); "herpes iris" (Järish); "fatal pemphigus-like dermatitis" (Mayer); "peculiar skin-eruption" recurring during pregnancy" (Oswald); "bullous eruption of a peculiar character" (Leigh); "pemphigus composé" (Devergie); and "hydroa" (Jones, Bulkley, and others).

Symptoms.—Constitutional symptoms are usually slight or wanting, but the first appearance of the disease and the succeeding attacks or exacerbations are frequently announced by malaise, sensations of chilliness, decided rigors, or alternations of cold and hot sensations, with systemic disturbances. The skin usually is the seat of pruritic or of burning sensations, followed in the course of from twelve hours to two days by the appearance of the exanthem, which may be macular, papular, tubercular, vesicular, pustular, or bullous in type, or be combinations of these lesions recurring in every variation. The lesions may be cutaneous, muco-cutaneous, or mucous in situation.

The macular form of eruption appears in small-coin to palm-sized patches, irregularly rounded, coalescing, well or ill defined as to outline, and slightly raised, suggesting the lesions of erythema multiforme or urticaria. Imperfectly defined maculo-papules, papules, and papulo-tuberculous lesions, varying in shape, size, and firmness, may also spring from or be intermingled with the reddish maculations described above.

In typical development, however, the disease presents cutaneous symptoms of herpetic type. Flat, slightly elevated, hard, angular, irregularly outlined vesicles may appear, pinhead- to bean-sized, and tensely distended. They may be pale yellow or darker in color and with or without areolæ. When bullæ form they may be sparse or be plentiful, and be bean- to egg-sized, with cloudy, lactescent, hemorrhagic, or purulent contents. Pustules when present are single or are clustered, pinhead- to bean-sized lesions, flat, each surrounded by a livid areola. When evolution is complete, segments of rings, or distinct rings, of new minute or large pustules surround those first formed, and in less than a week these rupture and become covered with a crust, which is flat, adherent, and yellowish, greenish, brownish, or blackish in color. When there is coalescence a large coin-sized pustule and crust may result, and even extensive patches of these coalesced lesions may form. The lesions may number from a score or fewer to hundreds.

The imprint of the cutaneous symptoms is multiformity and recurrence. Vesicles, pustules, and bullæ without order or regularity of evolution or of recurrence appear at one and the same time, in rapid or in slow succession, and, without fixed intervals of appearance, for months at a time. Generally, however, a prevalence of one special type of lesions may be noted during a single period of outbreak or of recurrence. This prevalence is in the direction generally of lesions of an herpetic type, viz., the vesicular and the bullous in groups, though

less frequently one of the other types may predominate, and rarely vesicles may be absent.

As a result of the conditions described above a peripheral new formation of lesions tends to produce marginate patches in which grouping occurs, the groups, however, being interspersed with diffusely disseminated lesions of various types. The irregular, angular, or stellate forms of the lesions containing fluid are highly suggestive. Pigmentation and infiltration of the skin are commonly noticed. The subjective sensations of burning increase and diminish as cutaneous lesions are multiplying or are disappearing. The pruritus is in some cases more severe than in eczema, and the traumatisms of scratching add greatly to the multiform features of the disease.

The disease lasts for months and even for years. Duhring reports cases lasting from five to fifteen years, with periods of relative or of entire immunity. In one of Duhring's cases there were thumb-nail-sized, raised but flat, golden-yellow-colored lesions, of firm consistency, containing a similarly colored, thick, consistent, gelatinous pulp; these features have been noted in several other instances.

When the oral cavity is invaded there appear upon the sodden and macerated mucous surface pustules and bullæ, which rupture, leaving raw and unhealthy-looking erosions, even sloughing patches of mucous membrane. Crusts form about the nares and the lips, and the stench from the patient is intolerable. In the same way the vulva, the anus, and the prepuce may be surrounded by vesicular and bullous lesions which form also on the mucous surfaces adjacent, and pursue a course similar to that recognized in the mouth.

In grave cases, as the skin-symptoms exhibit a marked aggravation the systemic condition changes for the worse. After a low fever alternating with chills and accompanied by progressive cachexia and emaciation, an intermittent diarrhœa or a pneumonia may close the scene. The repulsive appearance of the patient at the last, in severe cases, is as formidable as in fatal cases of confluent variola or of severe pityriasis rubra.

Etiology.—The disease occurs at all ages, but much more commonly after adult years have been attained: often in individuals of neurasthenic type or in those in whom the nervous system has been subjected to unusual strain. Mental crises, nervous shock, fright, anger, physical fatigue, and defective renal excretion have all been noted as causes of the malady. Among other effective conditions have been named menstrual irregularities, pregnancy, the puerperal state, and septicæmia. It is possible the irritation of the nervous system may be due in every case to a toxæmia, but by many the disease is considered purely a neurosis.

Pathology.—Our personal knowledge of the pathology of this affection is based upon the study of a number of sections of the skin removed from the person who was the subject of the sketch from which the accompanying plate was prepared. The following is Duhring's account of the pathology of the affection, which fully substantiates our own conclusions. In the mucous layer are vacuolated cells with shrunken nuclei and a few polynuclear leucocytes. The granular layer is discernible. The blood-vessels of the papillæ are dilated and contain erythro-

cytes, polynuclear leucocytes, and eosinophilous cells with fibrin. A succeeding stage exhibits infiltration of the papillæ with polynuclear leucocytes, small mononuclear cells, and eosinophilous cells. In a yet more advanced stage the infiltration pushes the epidermis upward, leaving a clear space beneath filled with fine fibrinous strands and coagulated albumin. Larger and larger vesicles are formed by confluence of the swollen cells in adjacent papillæ, the vesicles becoming filled with a close, fine or coarse, network of fibrin containing in its meshes polynuclear leucocytes, epithelial cells, eosinophilous cells, and coagulated albumin. Eosinophiles are seen in many cases between the epithelial cells. The deeper portion of the corium is for the most part unchanged. Eosinophilia is present as a rule, but its exact significance is not established, as it is found in other conditions. Lerrede¹ believes that eosinophilia when combined with excretion of eosinophiles through the skin is peculiar to dermatitis herpetiformis and allied conditions.²

The **Diagnosis** in classical cases is readily made; in others the distinction between dermatitis herpetiformis, impetigo herpetiformis, and certain forms of pemphigus is exceedingly difficult. It is possible that between the three there may be transitional forms scarcely to be assigned to the one category or the other. The same is true of certain exceptional varieties of erythema multiforme. The diagnostic value of the presence of eosinophilous cells (the fluid drawn from the blebs having been reported by Lerrede and others as equal to from 30 to 95 per cent. of the total number of leucocytes) has been weakened by the discovery of these same bodies in large numbers in the serum removed from simple blisters of the skin.

The diagnostic features of the disease are: chronicity, with or without remissions or intermissions; multiformity of the lesions, among which those of herpetic type usually predominate; the tendency of the lesions to appear in groups or patches; the very marked capriciousness and variableness of the recurrences and exacerbations in their times of appearing, and in the nature, extent, and severity of the lesions; itching, often intense; and more or less pigmentation.

Treatment.—Internal treatment has been directed to meet the indications presented. Of great importance are hygienic measures with a view to maintaining the patient's general health. All excesses, excitement, and everything tending to interfere with the equilibrium of the nervous system should be avoided. A nutritious but simple diet, regular habits of living, with sufficient outdoor life and exercise, are all of great value. Medication is directed chiefly toward improving the tone of the nervous system, for which purposes strychnine, quinine, iron, small doses of arsenic, and phosphorus may be used. Preparations of malt and cod-liver oil are often indicated. Mild laxatives, and the free drinking of water between meals and before meals, are of value in aiding elimination. For the same purpose small doses of mercurous iodide may be continued for weeks at a time. Stelwagon has found

¹ *Annal. de Derm. et de Syph.*, April, 1899.

² For a full discussion of the relation of this disease to allied vesicular and bullous dermatoses, cf. articles by Jamieson, *Brit. Jour. of Derm.*, 1898, pp. 73 and 118; Brocq, *Annal. de Derm. et de Syph.*, 1898, pp. 849 and 945; and Lerrede, *Monatshft. f. prakt. Derm.*, 1898, p. 381.

general galvanization of value in one or two patients. In exceptional cases arsenic in full doses acts almost as a specific; it is of most value in vesicular and bullous eruptions. It should be remembered that when arsenic is not suited to a given case large doses of the drug may do much harm.

Other existing disturbances of the general economy due to rheumatic tendencies, kidney-disease, indigestion, constipation, or other cause should be recognized and properly be treated.

Locally treatment is directed to keeping the surface clean and aseptic, and to making the patient comfortable. Duhring recommends stimulating applications when they are well tolerated, but in many cases soothing and sedative preparations are necessary. Among the stimulating applications which have proved of value may be mentioned lotions and oils containing tar, carbolic acid (1 to 20 per cent.), ichthyol (2 to 10 per cent.), and thymol (1 to 5 grains (0.06–0.33 to 30.) to the ounce). Stelwagon highly recommends liquor carbonis detergens in strength varying from 1 part to 10 parts of water up to the pure solution. Duhring found sulphur ointment (2 drachms of sulphur to the ounce (8. to 30.)) of great value in cases in which there were vesicular, pustular, and bullous lesions. This ointment should be rubbed in vigorously, but should be tried on a small surface at a time for fear of inducing irritation.

In most cases a soothing treatment is demanded by means of alkaline, bran-, or other demulcent baths, followed by some of the dusting-powders or the lotions advised for use in the acute stages of eczema. Ointments are not indicated, as a rule, but in a few cases diachylon ointment (Hebra), Lassar paste, zinc, mercurial, and other pastes and ointments have been used to advantage. For relief from itching camphor and chloral (1 to 5 per cent.) in oils or ointments may be employed. Many patients are treated with very great comfort to the end in the continuous warm water-bath.

The **Prognosis** is always doubtful, and is often grave. It is not certain that the disease is ever completely relieved, though temporary recovery from repeated outbreaks is common.

HERPES GESTATIONIS (PEMPHIGUS HYSTERICUS) is a name that has been employed to designate erythematous, papular, vesicular, and bullous lesions, accompanied by marked pruritic and burning sensations, occurring usually upon the extremities, but also upon other parts of the body. The subjects are usually pregnant or hysterical women, who are said to exhibit recurrent attacks in successive conditions of pregnancy or neurotic disorders. The view of Duhring, that this disorder should be included under *Dermatitis Herpetiformis*, should be accepted.

POMPHOLYX.

(Gr. *πομφολυξ*, a bubble.)

(CHEIRO-POMPHOLYX, DYSIDROSIS.)

The disorder indicated by the above title has been the occasion of no little medical controversy. Observers are not agreed as to its

nature and identity. Kaposi asserts that the symptoms are those simply of acute eczema. Tilbury Fox, Hutchinson, Robinson, and others have made careful studies of the malady. The paragraphs in this treatise devoted to dysidrosis are intended to call attention to the disease as it occurs in connection with the affections of the sweat- or coil-glands.

Symptoms.—The disease affects simultaneously and, as a rule, symmetrically the hands and the feet; if either organs are spared, it is commonly the feet. One side may be more extensively involved than the other. The eruption is preceded or is accompanied by a burning or a tingling pain, and is characterized by the appearance on the dorsum, or the sides of the fingers, or over the palms and soles, or over the whole hand or foot, of deeply set, single or numerous, grouped or confluent vesicles, or of vesico-bullæ. According to Fox, in the earliest stages of the vesicles annular collections of fluid may be seen about the sweat-pores. The appearance of well-developed lesions is compared with that of boiled sago-grains imbedded within the skin. When the bullæ attain extreme development the distended lesions, as large as pigeon's eggs, project from the skin, these lesions being irregularly outlined and containing a neutral or an alkaline fluid, translucent or turbid, and seated on an oedematous, often exquisitely painful and sensitive skin. The bullæ are said not to rupture spontaneously, but to undergo absorption in a fortnight or more, with exfoliation of the loosened epidermis; but there are well-marked exceptions to the rule. Beneath the purposely ruptured bullæ is a new-formed and reddened or exfoliated and sodden (which under favorable circumstances becomes later a sound) epidermis. There may be coincident malaise, thermal changes, marked mental despondency, or hebetude. The hyperidrosis mentioned by some authors may or may not be a prominent feature in the case of affected patients before and during the occurrence of the disease. There may be recurrent attacks in consecutive seasons, and also recrudescence of the disease in the affected. It occurs in both sexes, but apparently more often in women in England; in America it is believed that more male patients have suffered. The ages of the latter are from those of childhood to those of middle life; one well-marked case occurred in a man of sixty. The sufferers, with but few exceptions, are in poor health, are broken down from nervous overstrain, and are neurasthenic rather than cachectic. Mild types of the disease occur which it is difficult to distinguish from pemphigus benignus.

Pathology.—The differences among observers respecting the character of the disease depend upon whether the view is taken with Fox, Crocker, and others, that the vesicles lie directly connected with or in the line of the sweat-duct; or whether, with Hutchinson, Robinson, and others, no connection with the coil-glands is recognized, the vesicles lying in the superior portions of the rete over the papillæ and not over the rete-pegs which pass below to meet the ducts of the coil-glands. Crocker, however, found lesions in both situations. The disease occurs most frequently in persons who are worried or nervously depressed, and is probably a neurosis.

Diagnosis.—Pompholyx is to be differentiated from eczema. The

tendency of the vesicles to persist, and after intentional rupture to fail to furnish a serous exudate, is strikingly different from the course of eczema. Again, there is seldom, if ever, in well-marked pompholyx a tendency to change in type from a serous to a pustular exudation. Lastly, eczema of the palms and the soles is almost invariably of erythematous type. It differs from pemphigus in the absence of cyclical phenomena, in its special localization, and in its frequent vesicular origin.

Treatment.—The internal treatment of these cases is of importance. Patients require the best climatic and hygienic environment and mental distraction. In the way of medicaments, quinine, nux vomica, iron, the mineral acids, ergot, cod-liver oil, matzoöl, and kumyss may be needed. The local treatment is by employment of diluted black wash; oleated lime-water with zinc oxide or bismuth subnitrate, or Lassar paste covered with boric or salicylated powder; or by the application of strips of muslin spread with lead or with zinc salves.

The disorder is in certain subjects due to strictly inherited tendencies. We have had under observation three typical cases in the person of a mother and two children, one of the latter a girl, all of whom had suffered since birth from successive crops of vesico-bullous lesions with hyperidrosis of the hands and feet. The heart of each was in an irritable state, the pulse-rate of the mother having been repeatedly registered at 122 to the minute. All three patients complained of gastric crises.

In France a number of disorders accompanied by coldness and sweating of the hands and feet, and characterized by lesions limited to these organs, are cited as instances of dysidrosis. Thus, a passive erythema and areas of congestion of the skin of the organs named, displaying non-bullous lesions, are commonly set down in Paris as illustrations of dysidrosis. It is usual in America to limit the titles dysidrosis and pompholyx to the affection here described with marked preponderance of vesico-bullous lesions as hand and foot symptoms.

In all cases the heart should be examined and the condition of the circulation carefully determined. Organic and functional cardiac disease is responsible for many cases.

PSORIASIS.

(Gr. *ψωρά*, the itch.)

(LEPRA, ALPHOS, PSORA. *Ger.*, SCHUPPENFLECHTE.)

Symptoms.—In psoriasis the primary lesion is a punctiform macule of reddish-brown tint, which always at the earliest moment of observation is covered with a delicate whitish epidermic scale. When this scale is removed, even by gentle scraping, one or more minute droplets of blood exude from the points beneath which lie the vascular papillæ of the corium.

The lesions of psoriasis vary so widely in size, shape, and distribution that the several phases of the disease have been given descriptive names. These names have no pathological significance, and are used solely for the purpose of indicating the size, configuration, and distri-

bution of the lesions. When the disease appears in the form of small scale-covered points it is called *psoriasis punctata*. Should the disease progress to fuller development, there form patches of larger size, always with a definite contour, very slightly elevated above the general level of the integument, and covered with whitish, mother-of-pearl-colored scales in abundance. When these scales are about the size of drops of water the disease is termed *psoriasis guttata*. In more advanced conditions of the disease other names are employed. Thus, *psoriasis nummularis* is characterized by small coin-sized patches; *psoriasis circinata* or *orbicularis*, by patches in which the disease is actively exhibited at the periphery of a circle, in the centre of which the scales have disappeared; *psoriasis gyrata* and *figurata*, by coalescence and extension of several patches, forming thus fantastic figures covered with grayish-white imbricated scales; and *psoriasis diffusa*, by much more extended and uniform involvement of the skin in large areas. In *psoriasis follicularis* the coil-glands and hair-follicles are chiefly invaded.

The greatest variation is exhibited in the progress of the disease, and to this point special attention should be directed. Thus, in a single individual the eruption may appear upon one or more regions of the body in the form of the punctate lesions described above, and thereafter may regularly progress through the degrees suggested by the list of names given, until the surface of the body is completely covered from the crown of the head to the soles of the feet. This condition is, fortunately, very rare, and, indeed, denied by some observers. One rarely sees a case in which a few square inches of sound skin cannot be discovered at some point of the body-surface. More often the eruption tends to remain stationary where one or another of the less extensively developed phases of the disease has been displayed. Thus, the patches may at no time be larger than half an inch in diameter, and, though very numerous, may fail for years to extend beyond such a limit. They may persist even for a longer period in still smaller dimensions, or, what is perhaps more common, may occur in guttate forms upon the chest, and in patches as large as the palm over the knee or the sacrum.

The sites of preference of the disease are over the extensor surfaces of the extremities, especially about the elbow and the knee, in which situation it is decidedly most common. After these locations should be named, in order, the scalp, the region of the sacrum (on which often the largest patch upon the body can be discovered), the upper surface of the chest, the face, the belly, and the genitals, more rarely the hands and the feet.

The disease is essentially chronic in its course, is never contagious, and the efflorescence does not usually awaken any subjective sensation. Its features are so pronounced in typical cases that its recognition is facile, after appreciating the number and distribution of the patches, their clean-cut outline, the unaltered integument between the lustrous and shining scales, and the red border of the skin which may crop out from beneath the squamous thatch above, or be completely hidden by the latter. Rarely a single patch betrays the existence of the disorder.

When the disease is acutely spreading over the skin-surface it has

occasionally a different expression, which is often seen in young adults. The patches are perhaps as large as a pullet's egg; are dark or lurid red over the whole; are covered with a more uniformly constituted, thin, squamous film or sheet of semitransparent delicate membrane through which the red glare of the patch beneath is visible. This condition may also be seen in young persons to whom arsenic has been administered for the relief of the disease, with the production of irritative effects.

In its indolent moods the color of the patch varies somewhat with the hue of the patient's complexion. Blonde women with flaxen hair and clear tint of the integument often exhibit singularly waxy-whitish patches, decidedly differing in color from those occurring upon the muddy and greasy integument of dark-skinned men. The scales, which are usually abundant, may adhere with considerable firmness to the patch, or, more frequently, may be shed freely from the surface, in pronounced cases powdering the clothing of the patient or the sheets of the bed upon which he reposes at night.

There is never at any time in the course of the uncomplicated disease the appearance of other lesions or their sequels, such as vesicles, pustules, crusts, papules, tubercles, ulcers, or any discharge-feature. The eruption is dry from first to last. Exception may only be made in the case of patches occurring in situations where motion of the skin produces fissure, an accidental and by no means characteristic complication. Exception also may be made of certain acute symptoms, especially developed in young and tender skins in which considerable redness, occasionally with an erythematous halo, appears in and about individual patches, with the production of itching, heat, burning, pain, or other disagreeable sensations and symptoms of scratching.

The involution of the disease is evident in a gradual cessation of the scale-formation and the exhibition of a normal epidermis which progressively spreads from the centre or is at once perceptible over the entire surface of the patches. No cicatrization results.

Upon the scalp plaques of well-defined contour, covered with thick whitish scales, may mat the hairs, but alopecia rarely results. The dry condition of these scales contrasts with the greasiness of the crusts formed in seborrhœa of the scalp. Often a fillet or band of diseased tissue, one or more inches in width, projects beyond the border-line of the scalp and forehead. When the vertex is bald from physiological loss of hair the patch of psoriasis usually lingers near the fringe of the hairs left at the sides of the head, projecting thence to the regions of baldness. On the face, as well as over the genitals, the lesions are usually both indistinct and small-sized, being displayed, as regards the former locality, over the cheeks, chin, and nose, avoiding the parts near the mucous orifices. When there is much vascular congestion, especially of the passive kind, the patches assume a violaceous or purplish tint. All forms of lesions are seen upon the trunk, especially over the dorsum and near the sacrum; the patches in well-marked cases encircling the body in ill-defined parallels reaching from the spine forward. The hands, feet, fingers, and toes are not often involved, and the palms and soles only so rarely invaded

as to throw doubt upon a diagnosis based upon the existence of the disease solely in these regions. In severe cases the nails are secondarily attacked, being thickened, eroded in points, irregularly laminated, rigid, and becoming brittle and yellowish white or dirty whitish in color.

The amount of scaling varies greatly in different persons and in the same individual; sometimes the scales are abundant and thickly heaped up over even small areas; sometimes they are sparse over large areas. In acute febrile and other intercurrent diseases the disorder may fade or disappear. Where the epidermis is thin the scaling is less; therefore, over flexor surfaces, near the mucous orifices, and on the back of the hands, the scaling is less than over extensor surfaces, in regions remote from the mucous orifices, and on the palms and soles. The scaling is also less in youth than in advanced years. The disease may for years be limited to two or three continuously existing patches, or, what is far more common, may recur at irregular intervals and under varying circumstances. As a rule, psoriasis is worse in winter and in cold climates, though patients may demonstrate the reverse of this.

The scales may display, instead of a lustrous white, a deep yellowish shade, and, instead of being imbricated, may form a thin continuous sheet of exfoliated epidermis. When the eruption is disappearing the scales fall, leaving a pigmented or slightly discolored patch of integument.

As a rule, psoriasis pursues its course with singularly few complications. The gravest cases are those in which arsenic has been administered in large doses for relief of the symptoms, when, probably as a result of the medication, verrucous growths develop in the psoriatic patches, which later become epitheliomatous.¹ At times the eruption is the source of excessive annoyance, being the seat of intense pruritic and burning sensations of a persistent type.

There can be no question that intermediate forms between eczema and psoriasis occur, in which forms it is difficult to determine whether the two disorders coexist or the one has assumed the features of the other. In these cases there are itching and infiltration of the skin, with vesicular and other lesions foreign to psoriasis, and a catarrhal discharge.

Psoriasis is not known to affect the mucous surfaces. The lesions of so-called "psoriasis linguæ" are those of "leukoplakia buccalis," of "smokers' patches," of syphilitic disease of the mouth, or flat epitheliomata.

Etiology.—The causes of psoriasis are not known. As no external or internal factors can be demonstrated to be effective in its production, it is safest to conclude that these unrecognized sources of the affection are limited to the skin itself. So far as known, the disease is neither contagious nor hereditary. It is not limited to either sex, occupation, or social condition; it bears no definite relation to syphilis, eczema, gout, rheumatism, struma, or dyspepsia; it appears in feeble and delicate individuals as in the most superb specimens of manly vigor and womanly beauty, and though not occurring in infancy, yet it often first

¹ Cf. J. C. White's paper, Amer. Jour. Med. Sci., 1885.

appears in early life. Kaposi reports a single case in which the eruption appeared in the eighth month, and Elliot a case of first appearance at the eighteenth month of life. Under these circumstances the question arises: Is this affection of the integument, when uncomplicated by the symptoms named above, a disease or a deformity? Certainly in a very large number of individuals, displaying through life unchanging patches in which the characteristic symptoms are the same year after year, the ailment would seem more properly to be classed with the deformities than with the diseases of the skin. In point of frequency the eruption ranks next after eczema.

No child was ever born psoriatic, yet believers in the possibility of the transmission of the disease by inheritance are numerous, and some of them are careful observers. Robinson goes so far as to say that in the "majority" of all cases there is an inherited predisposition to the disease. Others conclude it to be an inherited or transmitted form of syphilis, struma, tuberculosis, rheumatism, or gout. Weyl thinks that inheritance may possibly be the sole cause. Bazin admits the existence of both an herpetic and an arthritic psoriasis.

Bearing in mind, on the one hand, the relative frequency of psoriasis, and, on the other hand, the strict tests which should be applied in order to prove that a disease is actually transmitted by heredity, we find that the doctrine of heredity in psoriasis fails of establishment. It is putting a low estimate on the actual figures to state positively that there must be more than one thousand psoriatic patients in almost every country, no one of whose ancestors, so far as known, had psoriasis, syphilis, or rheumatism. They furnish too large a body of evidence to be either ignored or set aside with a word. Thousands of their children are living to-day free for years from any evidence of disease; they, too, call for further proof on this point.

It has long been known that in psoriatic subjects lesions may be developed artificially in the lines of mechanical irritation. In this way, figures in the shape of anchors, crosses, hearts, etc., have been produced on the skin of psoriatic patients, one of whom has been ingeniously photographed by Fox, of New York.¹ The disease has also been attributed to vasomotor neurosis, to fright, to shock, and to neuralgias.

The disorder is rather more common in male than in female patients and it appears to be rare in the negro races. According to Greenough's statistics, it represents about $21\frac{1}{2}$ per cent. of all cases of cutaneous disease. It has followed vaccination, scarlet fever, and other diseases.

Gowers alone reports the artificial production of psoriasis by the internal administration of sodium biborate. Allusion is made to this fact in the chapter on *Dermatitis Medicamentosa* (*q. v.*). Further evidence would be required to prove that these results differed to any appreciable extent from those recognized in any squamous dermatitis produced by an ingested drug.

In some cases the disorder is due to exclusion of sunlight from those portions of the body covered with the clothing and the hair. Certain it is that only in extreme cases is the face attacked at a distance from the

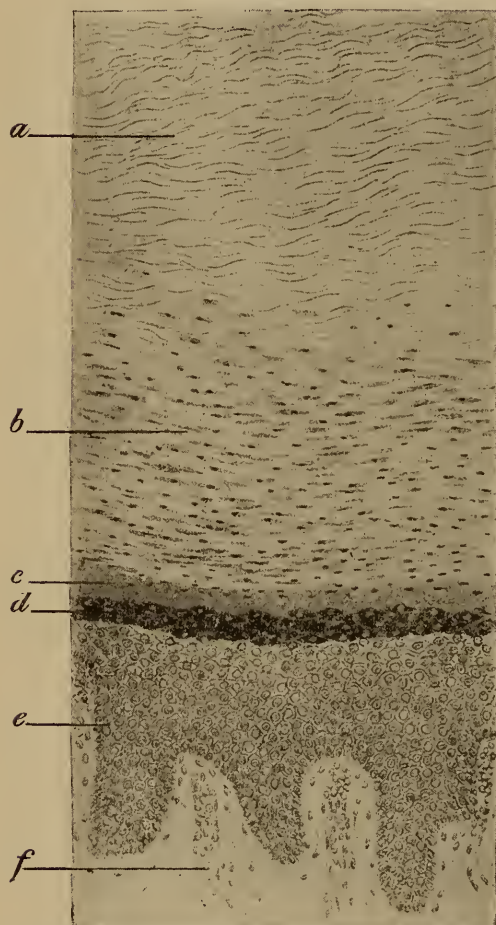
¹ Photographic Illustrations of Cutaneous Diseases. New York.

line of the hairs upon the brow and bearded region (sides of the nose, cheeks, temples). It is likewise true that after exposure of these parts to abundant sunlight, not only when patients are intentionally treated by such exposures of the nude body to light in hospitals and in private practice, but in occupations which necessitate the same, beneficial results are often well marked.

Lassar¹ succeeded in producing a disease of the skin in rabbits by rubbing into various portions of their bodies scales, blood, and lymph removed from psoriatic patches of a male patient. The disease thus induced is said to be capable of transmission to other animals. Campana, Tommasoli, and other Italian observers have repeated these experiments, with the result of reaching the conclusion that psoriasis is produced by a parasite as yet unrecognized.

Pathology.—The observations of Wertheim, Neumann, Auspitz, Kaposi, and Robinson, of New York, are substantially in accord respecting the general character of the changes occurring in the course of the disease, though they differ upon the question whether it depends upon an inflammatory or a purely hyperplastic process. Both views are probably correct, the disease being at times unquestionably the result of a circumscribed inflammation, at other times being associated with a simple overgrowth of the elements of the epidermis, and again at times with an inflammation which the hyperplasia has awakened. There is always abundant development of epithelia in the rete, and, in recently formed

FIG. 48.



Vertical section from an old patch of psoriasis. *a*, hypertrophied horny layer; *b*, remnants of nuclei; *c*, stratum lucidum; *d*, granular layer; *e*, hypertrophied rete; *f*, dilated vessels and infiltration in corium. (After LELOIR and VIDAL.)

patches, distention of blood- and lymph-vessels in the papillary layer of the corium beneath. In older plaques the rete either dips downward to an unusual extent between the papillæ, or the latter push upward in the manner of wart-like prolongations. Both hypertrophies concur. The corium is thickened later by an increase of its elements which may involve its entire width as far as the connective tissue. In the older plaques, also, the connective-tissue elements are often separated by a slight serous infiltration. Hyper-pigmentation is also noted. The external root-sheath of the hairs in direct connection with the rete

¹ *Deutsch. med. Zeitg.*, 1885, No. 93.

participates in the same process, thus explaining the defluvium capillitii of certain cases, and the resulting transient or permanent baldness. The sebaceous glands are secondarily involved in the scalp only.

Munro¹ studied 1500 sections cut from six lesions in the earliest period of development. He states that the primary lesion in every instance is a collection of from ten to twenty or more leucocytes in the horny layer near the surface. Hyperplasia of the horny layer beneath the "miliary abscess" follows and pushes the latter toward the surface. Other minute abscesses form in the vicinity and are in turn pushed out to the surface. The scales of psoriasis are thus formed of a series of horny plates, between which are layers of dried fragments of leucocytes. In this early period no changes can be found in the corium or deeper layers of the epidermis. Though the "abscesses" and their location suggest the presence of micro-organisms, none has been demonstrated.

Unna's conclusions respecting the pathology of psoriasis strongly suggest that in his view the disease is parasitic in origin, and that the morococcus which he has striven to demonstrate as the efficient cause of eczema is also here effective. There is no evidence, however, that psoriasis has ever been induced artificially by the transference of these cocci to sound from morbid skins. He points out that the readily induced bleeding from the scraped psoriasis-patch results from the nearness of the head of the papilla to the surface and the thinness of the overlying rete; and shows that the vessels about the patch ascending obliquely are usually increased in length and thickness. The enlargement of the papillæ he believes to be rather a deformity than an increase in volume the result in part of a cellular multiplication and in part of a not inconsiderable œdema. But little light is thrown on the essential character of the psoriatic process by these observers.

Lang,² of Innsbruck, attracted notice by his alleged discovery of certain fungous elements in psoriasis that he claims to be the cause of the disease. These fungi he finds in the whitish pellicle beneath the superficial squamous layer, to which Bulkley had already called attention. After stripping the pellicle or a part of it from the surface, and subjecting it to the action of a 5 per cent. solution of caustic potash, the epithelium appears translucent, and upon and beneath the epithelium double-contoured and highly refractive spores become visible. Lang considers this fungus to be of the lowest species, different from any previously recognized upon the skin, and he terms it "epidermophyton."

Weyl, who believes that psoriasis is due to "an inherited weakness of the nervous centres," has seen Lang's "brood-cells," and he regards them as "myelin-like exudations"; but this position is disputed by both Wolff³ and Eklund,⁴ who confirm Lang's observations and who believe the disease to be of parasitic origin. They explain the artificial production of psoriatic patches in the psoriatic skin by supposing

¹ *Annal. de Derm. et de Syph.*, 1898, p. 961, and *Brit. Jour. of Derm.*, 1900, p. 63.

² *Vierteljahr. f. Derm. u. Syph.*, 1878.

³ *Ibid.*, 1884.

⁴ *Annal. de Derm. et de Syph.*, 1885.

spores to have been deposited beneath the skin, and not previously awakened to activity in the sites of such experiments.

Diagnosis.—The recognition of a pronounced case of psoriasis is made with ease, and often by those unskilled in cutaneous disease. As usual, it is the atypical form of the eruption that awakens doubt. Psoriasis is to be distinguished from :

Eczema.—Eczema and psoriasis differ in a striking manner with respect to their sites of predilection and their extension from such sites in progressive cases. Eczema, from the head to the toes, elects the anterior surface of the body, the neighborhood of the mucous outlets, the flexor faces of the joints and limbs, the crevices, folds, pockets, depressions, and protected angles of the skin. Psoriasis elects the posterior surfaces of the body, avoids the vicinity of the mucous outlets, spreads abundantly over the extensor aspect of the joints and extremities, and enjoys the regions of pressure and friction, as the skin over the patella and the olecranon process of the ulna. Psoriasis, covering the vertex and scalp, lingers at the brow, where its scaly thatch stretches from side to side close to the line of the hairs, and creeps more indistinctly down the face on either side in front of the ear, reluctant to spread over the cheeks, nose, and lips. Eczema easily escapes from the scalp to the nose, lips, or chin, or lurks in the folds of the pinna of the ear. Psoriasis will cover the back and reach forward in front by almost symmetrically disposed parallels in the direction of the ribs, while eczema sweeps between and beneath the breasts or around the nipple. As before stated, the largest patch of psoriasis on the body will often be discovered over the sacrum, while eczema creeps upward with a diminishing vigor from the anus between the clefts of the nates. Psoriasis often spares the hands and the feet, which eczema punishes.

In individual patches eczema will be recognized by its severe itching; by the scratching it excites; by the history of moisture, discharge, and crusting; by its ill-defined outline; by its asymmetrical disposition, except upon the similarly irritated hands and feet; and by the fewer, more yellowish, smaller, and less lustrous scales which characterize its squamous varieties.

Favus of the scalp might be mistaken for psoriasis of the same region, but the occurrence of sulphur-colored, cup-shaped crusts, the existence of the parasite, the lustreless and brittle condition of the hairs, and a possible history of contagion will insure identification of favus. In psoriasis, too, the hairs are usually firmly attached in their follicles, while they are loosened in favus.

Lichen Ruber Acuminatus, though a much rarer disease than psoriasis, must in cases be carefully recognized as distinct from the latter. In lichen ruber the lesions are papular, discrete, and are covered by a few scales, these being yellowish in color and never lustrous. There is generally a constitutional impairment of health, and, when the whole epidermis begins to break up in scales, a condition of well-marked marasmus. When scratched, the patches of the disease do not bleed. Finally, lichen ruber tends to a fatal termination.

Lichen Planus.—In this disorder the scales are at the outset attached

to the apices of minute polygonal papules, which are situated on the flexor rather than on the extensor aspects of the extremities, on which psoriasis is more abundant. The patches in well-marked cases of lichen planus have a characteristic crimson-red or a purplish hue rarely lacking, and never perfectly seen in psoriasis. The scales, further, of lichen planus are of a characteristic silvery whiteness, which is never perfectly seen in psoriasis, though imitated by the yellowish-white or pearl-white hues of the latter. Lichen planus rarely appears in oval or roundish patches, but is peculiar among all dermatoses in its angular, linear, and even stellate arrangements.

Lupus Erythematosus.—In any doubtful case in which cicatricial tissue is discovered in the site of a patch on which the disease has existed the diagnosis is clear, since psoriasis never leaves a scar. Lupus prefers the nose, the cheeks, and other parts of the face commonly spared by psoriasis unless the eruption be very abundant elsewhere. The scales of lupus are scanty, firmly adherent, yellowish, and attached to the orifices of the ducts of the sebaceous follicles; those of psoriasis are abundant, lustrous, and shed freely from the surface. Lupus is never, like psoriasis, a generalized eruption and is always much more chronic in course. There is a bluish and violaceous tint to the reddish patch of lupus erythematosus, especially when it occurs upon the face, while the highly colored patches of psoriasis are rarely facial, being more commonly seen on the trunk and extremities, and the outcropping disks on the face are the least colored of any on the body.

Pityriasis Rosea.—In this disease the patches are more oval than circular and the scales are much finer than those in psoriasis; pityriasis rosea is, moreover, much more rapid in its career and does not recur. When the branny scales are removed the surface beneath does not bleed. The centre of the patch is usually tawny or salmon-colored. The thoracic surface also may be exclusively involved.

Pityriasis Rubra.—If psoriasis be in any case universal, its distinction from pityriasis rubra would be difficult, if not impossible, on the basis of our present knowledge. Indeed, any such distinction would have but little practical value. A few typical isolated patches of a psoriatic character would point to the origin of the disease in any doubtful case.

In **Pityriasis Rubra Pilaris** the patches, when such are formed, are rarely circular. More commonly they are widely diffused, irregularly outlined areas covered, not with large scales, but with fine, dry, bran-like concretions not freely shed because more or less firmly attached to the underlying surface. Over the scalp the exuvium may exhibit a moderate degree of greasiness, never the lime-like scales heaped high in typical psoriatic patches of this region. The occurrence of pityriasis rubra pilaris with intense brownish tint over the tip of the nose and, with pathognomonic symptoms, on the dorsum of the manual digital phalanges, and the waxy lustre of some of the patches, are important features. In the affection last named there is often a long line of demarcation to be recognized, as, for example, along a thigh or over a shoulder, defining the limits on the one side of the widely dif-

fused area of scaliness and on the other of a sound integument. This is rare in psoriasis.

Seborrhœa.—This disease could only be confounded with psoriasis of the scalp; but the last-named affection is, in the vast majority of cases, exhibited also in patches upon other portions of the body on which seborrhœa is never seen. Seborrhœa of the scalp also occurs in usually diffuse forms, the surface beneath the crusts being rather anæmic and pallid in appearance, not bleeding readily, as in psoriasis. The crusts, too, in seborrhœa, are distinctly fatty and greasy when rolled between the fingers, and have a dirty-yellowish hue, rarely recognized in the whitish scales of psoriasis. In psoriasis the hairs are not progressively loosened and gradually thinned as in seborrhœa. Lastly, seborrhœic crusts may fringe slightly the line of the hairs at the brow, but they rarely form a band an inch or more in width, like a frontlet covering the upper half of the forehead, a not uncommon development in psoriasis.

Syphilis.—Psoriasis in many cases greatly resembles the squamous and papulo-squamous syphilides. The necessity for a clear recognition of either disease occurring in suggestive patches is often of the highest importance.

In syphilis the greatest aid will be obtained by a history in both sexes, of infection, adenopathy, and mucous patches; and in women of abortions, miscarriages, or stillbirths. Psoriasis is a singularly uniform disease; syphilis is decidedly multiform in its manifestations. Syphilitic patches are less symmetrical, more elevated at the edge, and the scales with which they are covered are fewer, smaller, and dirty whitish rather than lustrous in color. Their circular outline is often abruptly broken by gaps, with the result of producing semilunar and small arc-shaped segments. In syphilis the eruption is less generalized, and shares with other syphilodermata the brownish and purplish hues of the skin beneath, lacking the vivid redness and pinkish red of many non-syphilitic lesions. The scales of many of the syphilides which resemble psoriasis partake of the character of crusts, being agglutinated by pathological exudations from the patch; they are rarely so exclusively squamous as in psoriasis. In syphilis the tendency of the patch is to exhibit an affected surface somewhat beyond the line of the scales; in psoriasis the scales more frequently reach beyond the border of the affected epidermis beneath. The squamous syphiloderm of the palms and soles often occurs only in these localities. Psoriasis is extremely rare in such situations, and is not limited to these regions exclusively. A psoriasiform circlet limited to the region of the mouth, nose, or chin will generally prove to be syphilitic. The disease which has for a long time persisted in the production of squamous patches can generally be demonstrated to be psoriasis, as syphilis changes its type in the course of months.

Tinea Circinata.—In tinea circinata the discovery of the parasite, a history of contagion, and the frequent limitation of the disease to a single patch (a feature exceedingly rare in psoriasis) will usually suffice to establish a diagnosis. In ringworm of the body the scales are bran-like, and are more abundantly formed at the margin of the patch

where the fungus is luxuriant; while in psoriasis the scaliness is usually equally pronounced over the entire area of an invaded patch, unless the disease is in process of involution. The occasional occurrence of vesicles and vesico-papules at the peripheral border of the patch in ringworm is never observed in psoriasis. Ringworm is never generalized symmetrically; and upon the scalp or beard the discovery of brittle and broken-off hairs should always suggest examination for the parasite.

Treatment.—Treatment for relief of psoriasis must necessarily be limited to removal of its objective features. This treatment may be internal, with a view to the indirect action of the drug selected upon the skin; or topical, with a view merely to the reproduction of a sound epidermis in the patches of disease.

Internal Treatment.—Arsenic enjoys the highest rank in the internal treatment of psoriasis. What it is capable of accomplishing in other cases it can with best effect accomplish here. Whatever failures must be charged to its account in the attempt to relieve other cutaneous eruptions cannot safely be ignored in psoriasis. Arsenic administered internally is assuredly capable of relieving a certain number of cases of psoriasis. Given improperly in any case, it may be either powerless or manifestly be injurious. In a definite proportion of patients, most carefully selected as fit subjects for its therapeutic action, arsenic will prove utterly valueless in the most skilled hands. It cannot be demonstrated to possess the power to prevent recurrences of psoriasis, yet the latter must be recognized as a disease exceedingly liable to recur. Unfortunately, the proportion of cases in which arsenic will and in which it will not exhibit its happiest effects is not known.

The following rules for the administration of arsenic are in general to be observed: It should be given with or immediately after the ingestion of food, so that it may be commingled with edible substances in the stomach. It should be given at first in small doses which are to be cautiously increased. The possibility of the production of toxic effects should be remembered, and on their appearance the remedy is to be given in a smaller dose, and not completely discontinued unless such a course be imperative. If its administration be once determined upon, the arsenic should not hastily be withdrawn and another remedy substituted, but persistence for months should be enforced if no serious objection exist, lest the time be wasted which has been already expended in the effort to relieve the disease.

Arsenic is unsuited for all cases of psoriasis occurring with rather acute symptoms, such as subjective sensations and unusually vivid redness of the patches. It should not be given when the disease is in process of evolution, and, therefore, not in psoriasis punctata and guttata, unless the lesions have long been limited to patches of the sizes to which these names are given. For the same reasons it is often objectionable in the psoriasis of the young, for, though the drug is usually rather well tolerated in early periods of life, it is, unfortunately, in the young in whom the disease is also most often encountered in its progressive stages.

The remedial effect of arsenic, when that is obtained, seems to de-

pend upon the impression it exerts upon the rete, especially that part of it which lies in connection with the derma. When the metal is injected subcutaneously its first effects, according to Jamieson and Nunn,¹ are indicated by the appearance of a faint, narrow band along the base of the columnar epithelia immediately next the corium. This band is due to a softening of the protoplasm which separates the epidermal from the dermal elements. Subsequently the remoter epithelia are involved, the protoplasmic threads becoming obscure, the characteristic arrangement of the epithelia becoming less evident, and the natural features of the rete distorted, so that it remains attached to the derma by tags and by the prolongations which it sends down to the cutaneous glands. Jamieson suggests that arsenic stimulates the epithelia to exhaustion, the layer which lies next the blood-vessels containing the metal first appreciating its effects.

The preparation usually employed is Fowler's solution, the exhibition of which should always be begun in doses of from $\frac{1}{2}$ minim (0.033) to 3 minims (0.20), this amount to be contained in a solution of fixed and relatively large dose, such as a teaspoonful of infusion of peppermint, wine of iron, dilute syrup of gentian or of orange-blossoms, or compound tincture of cardamom with water. When only remedial effects are obtained, such as diminution of the scaliness, the dose may steadily be continued without change for long periods of time, and usually with advantage for some time after the symptoms of the disease have entirely disappeared. When, without the production of toxic effects the eruption seems unaffected by treatment, the arsenic may cautiously, and always under the direction of the physician only, be pushed until 20 and even 30 drops of Fowler's solution (the latter equivalent to $\frac{1}{3}$ grain (0.022) of arsenic) are administered at a dose.

The constitution of the Asiatic pill is given in the chapter on General Therapeutics. This pill is less likely to be as well tolerated by the stomach as Fowler's solution, but cases are on record in which the psoriasis which proved rebellious under the administration of liquor arsenicalis, Donovan's solution, and other internal remedies, yielded to the solution of arsenious acid in pilular form. Hebra gave two thousand Asiatic pills to a single patient before the disease disappeared; and in no instance were ill-effects produced.

With regard to the vulgar opinion respecting the arsenic-habit, which a long experience with this dosage has been supposed to beget, one never encounters such an instance in a psoriatic subject consuming arsenic. Patients who for several consecutive years have, without interruption, pursued an arsenical course, thus barely succeeding in keeping their cutaneous ailment out of sight, will in many cases affirm that, apart from any trifling and accidental toxic symptoms and those evident in the course of the eruption, they would not be sensible of the fact that they had taken the drug.

With an enlarging experience, one views with greater distrust each year the benefits to be derived from arsenic in any untried case of psoriasis. The great possibilities of its failure, of the repeated recurrence of the eruption, of the necessity of continuing the medication

¹ "The Histology of Psoriasis," Edinburgh Med. Jour., January, 1879, p. 627.

for one or two years, and, after that period of time, of witnessing a generalized development of the disease to an extent quite equal to that exhibited at the outset—all these considerations have weight in the mind of an ordinarily prudent man. Yet, in a minority of cases in which, under a judiciously directed arsenical course, the eruption slowly disappears and fails to recur, the value of the treatment is incontestable.

Instead of resorting first to the arsenical dose and afterward to other measures, the order should be reversed. That case of psoriasis which fails to respond to other treatment may finally be subjected to the influence of arsenic. He who, having vainly tried other approved measures, essays at last the virtues of this medicament, ought to be patient while testing his case with it. He should be willing to try it fully and fairly, and of all men be least ready to exchange it for a less valuable substitute. No reference is here made to the effect of conjoined internal medication with arsenic and external treatment by topical applications. However desirable it may be in the management of any individual case to arrive at the desired end by the speediest method, it is evidently needful, in order to assign to arsenic its exact therapeutic value, to understand what arsenic can accomplish unaided by topical measures.

Satisfactory results often follow the internal administration of mercurous iodide in $\frac{1}{5}$ grain (0.013) doses after meals. The remedy is given, not in cases in which a syphilitic taint is suspected (for psoriasis is not a manifestation of syphilis), but as an alterative. It is believed to be effective in consequence of its special effect on the liver. In some patients it seems to have little value.

Crocker has lately advised the use of sodium salicylate and salicin in all forms of psoriasis, but especially during periods of active development of the disease, when arsenic usually does harm. Haslund recommends potassium iodide, increased from the smaller to the largest tolerated doses. As many as six hundred grains of the iodide have been administered by this method *per diem*; it is of occasional service. The wine of antimony in 5 to 10 minim doses; chrysarobin, $\frac{1}{6}$ grain (0.01) rubbed up with sugar of milk, three times daily; potassium bromide and sodium iodide have also been administered with reported success.

Sodium arseniate in pill-form and ferrous arseniate have been recommended by Biell. Lipp injected arsenious acid subcutaneously. Robinson advises liquor potassæ, potassium citrate or acetate, or sodium bicarbonate in plethoric and rheumatic patients. In the gouty state with excess of urates in the urine he advises:

R	Potass. acetat.,	℥j;	30
	Spts. æther. nit.,	f ʒss;	15
	Vin. colchici,	f ʒij;	8
	Syr. aurantii,	f ʒjss;	45
Sig.	A dessertspoonful three times daily in water after meals.		

As to the other remedies employed internally for the relief of the malady, a very fair estimate of their value can be made by remembering that arsenic is superior to them all. Phosphorus, tar, copaiba, cantharides, colchicum, and pilocarpine have at times a feeble transitory

influence over the patches of the eruption, but their employment will disappoint far more often than satisfy. Iron, quinine, cod-liver oil, and the salts of the alkalies will meet important indications in the treatment of certain classes of patients, but the eruption is often seen in perfectly vigorous and otherwise healthy subjects. The treatment of psoriasis by the administration of extract of the thyroid gland is practically abandoned as fruitless of desirable results.

After the use of any one of these remedies it is rare to recognize any decided effect upon the cutaneous symptoms, even when patients in whose case they were indicated improve under their use, though the reverse may be true.

The diet suitable for a patient may in brief be described as that which is indicated by his or her general condition. Most authors agree upon the value of a greatly restricted diet. Acids, alcohol, and fatty substances should be excluded. Meat should sparingly be supplied; cooked vegetables and fruits may freely be eaten. Coffee, tea, and tobacco should in general be interdicted. Passavant, of Frankfurt, on the contrary, claims to have cured himself and others by an exclusive diet of meat.

External Treatment.—The influence of climate in inveterate psoriasis should never be ignored. Many patients who suffer from repeated relapses of the disease are worse in winter, and are either better or entirely free from the eruption in summer. In mild climates in which the temperature is uniformly registered at or near a point of maximum comfort for the skin this disease is both infrequent and less severe. Given an equable climate many patients obtain prompt relief at the seashore, while others improve rapidly under the influence of the dry atmosphere of higher altitudes.

The local treatment of psoriasis requires patience, care, and a certain degree of skill. Properly conducted, its results are reasonably satisfactory in a large majority of cases. The first indication to be met is the complete removal of the epidermic scales from the patches, which removal is accomplished in various ways. It is preferable to secure first their maceration in some fatty substance, such as one of the oils, or glycerin, or vaselin, after which the scales may be washed off with the aid of soap and water, the patient being given a general bath if the eruption be extensive. If it be localized, these oily or fatty substances may be spread upon pieces of lint or cotton, and thus be retained in contact with the skin by a bandage. The scales may also be removed rapidly with a dermal curette, if they occur in few patches, or if the patches are to be found in totality or in part upon some portion of the body in which the disfigurement demands special attention, as upon the forehead and the cheeks. The squamous masses are also removable with water alone, as after maceration of the skin in a bath, or after a profuse diaphoresis, or even after moderate exudation of sweat, if evaporation of the latter be prevented by covering the affected part with oiled silk or with rubber cloth. Usually there is no difficulty in removing these scales, patients often declaring that they can themselves cleanse the surface. They ask to be shown how to prevent the recurrence of the desquamation.

Baths play an important part in the subsequent treatment of the disease. They may be employed, as by Hebra, so that the patient remains in the water for from four to eight hours in the day; or be medicated by the addition of sulphur, tar, or other substances, so as to combine a medicative with a macerative effect. In private practice these baths are much less available than in hospitals. When the eruption is generalized and an excessive macerative effect is desired an undershirt and drawers, made of soft rubber cloth, may be worn by the patient for several hours of the day. The sweating is often profuse, and is debilitating to such an extent that the psoriatic skin will rarely tolerate the treatment for an entire day, or even for that part of the day in which active labor is performed. By this sweating alone it will at times be found possible to secure complete disappearance of the patches.

In other more obstinate cases, or in those in which for any reason vigorous treatment is indicated, as upon the scalp and face, *sapo viridis* may be employed with advantage in the soap-and-water treatment. The *spiritus saponis kalinus*, 2 ounces (60.) of the soap to 1 ounce (30.) of alcohol, may be briskly rubbed over the patches with the aid of a piece of flannel or a sponge, and then immediately be washed off with the oil and scales in a surplus of hot water, or be left for a time in contact with the part. Hebra and Kaposi employ a species of soap-paste, made by rubbing into each patch a small quantity of green soap to which a little water is added until the proper consistency is obtained. These inunctions are repeated twice daily for six days. The epidermis becomes brownish-colored, and in three or four days afterward it exfoliates in lamellæ; then a general bath cleanses the surface. In the French hospitals a somewhat speedier method is pursued. On the evening of the first day the patient is anointed with green soap, which is retained upon the skin during the night. In the morning he takes an alkaline bath, and immediately after is thoroughly anointed with lard. This course is repeated on the second and third days, after which the patient is usually ready for topical medication of the diseased parts.

For the more obstinate cases in which exfoliation of the epidermis is not readily induced more energetic measures have been adopted, such as the local use of salicylic acid in alcohol, 1 drachm (4.) to 4 ounces (120.), caustic acid and alkalies, scrubbing the patches with nail-brushes, floor-brushes, etc., and the use of clean white sand.

Once ready for topical medication, the patches may be subjected to the local action of the remedy selected for the relief of the disease. Salicylic acid, in paste, ointment, or plaster, in strengths varying from 2 to 15 per cent., is often effective. For the face, scalp, and hands there is no better remedy in the majority of cases than ammoniated mercury in 2 to 20 per cent. ointment or paste. This remedy is cleanly and usually causes the lesions to disappear; but it cannot be used over large areas without danger of absorption and constitutional symptoms.

A remedy of great value in the treatment of psoriasis is chrysarobin (or chrysophanic acid). This is a crystalline powder of the color of old gold, insoluble in water, but is readily dissolved in hot alcohol, acetic acid, benzol, vaselin, and hot fat. It is derived from the "Goa powder"

of the East Indies, or the "araroba powder" of Brazil, the employment of which in psoriasis was first recommended in 1878 by Squire, of London. The drug may be applied in strengths varying from 10 to 40 grains (0.66 to 2.66) to the ounce (30.) of ointment, paste, plaster, collodion, or liquid gutta-percha. It is occasionally used in lesser and greater strength, but with pure specimens it is liable in larger proportions to produce disagreeable effects. These effects are declared in a hot, itching, swollen, irritable, and erythematous or darkly stained skin, stretching with tolerable uniformity in every direction from the surface of application. Even in the strength named above it is necessary to begin its use with caution, testing it by application first to a limited area of integument. These excessive effects usually subside in a few days.

When the drug produces its most brilliant effects the psoriatic patch, previously denuded of its scales, assumes a whitish and normal aspect, contrasting thus somewhat remarkably with the chocolate or brownish-black discoloration of the stained skin at the periphery. This discoloration, when produced either by the ointment directly or by a frequent transfer of its ingredients to other parts by the medium of the clothing and the hands, involves also the nails, the hairs, and the underlinen of the psoriatic patient. Its employment upon the face and the scalp is thus largely interdicted. The staining of the skin and its appendages disappears entirely in time, but always slowly.

Fox,¹ of New York, employs a soft paste, made by rubbing chrysarobin with a sufficient quantity of water, which is smeared upon the psoriatic patches, the scales of which have previously been removed by one or more hot baths, with soap friction. As soon as the paste has dried, which it does in one or two minutes, a layer of collodion is allowed to flow over each patch, and to harden into a protective coating. This coating will remain in place for several days or longer, according to the location of the patches; when it falls or is washed off, the application of the powder and the collodion should be repeated. By this procedure the chrysarobin in full strength is kept in contact with the affected skin, and is prevented from exciting undue inflammation of surrounding parts or from staining the clothing. A mixture of the powder and the collodion may be used, but it is less efficacious. A film of collodion doubtless interferes with the action of the acid upon the skin. A somewhat similar plan consists in the use of gutta-percha tissue to retain a strong chrysarobin ointment in contact with psoriatic patches. The edges of this tissue will adhere tightly to the skin if a small camel's-hair brush, dipped in chloroform, be passed rapidly beneath them. Following Auspitz's plan, Fox has added 10 parts of chrysarobin and 10 of salicylic acid to 15 of sulphuric ether and 100 of flexile collodion. This mixture rapidly dries over the psoriatic patch, on which its specific effects are produced.

Tar is among the most valuable remedies in the local treatment of psoriasis. It will, however, accomplish the result desired only when so applied that it is well tolerated by the skin. In very young patients, as also in those whose skins are tender and irritable, or those suffering from any of the acute phases of the disease, it may prove decidedly

¹ Med. News, March 18, 1882, p. 289.

injurious. The rule should be always to employ it at first tentatively over a relatively small portion of the affected surface, upon which the medicament should remain for several hours, as tar will not in all cases promptly produce its injurious effects. These effects are, subjectively, a sense of heat and pain; and, objectively, heat to the touch, redness, and tumefaction. Often black puncta are visible when the tar is lodged in the orifices of the cutaneous follicles, simulating thus the "black head" of the comedo, a condition termed by Hebra "tar-acne."

Pix liquida, oil of cade, or preferably oleum rusci may be employed in the form of a salve, 1 drachm (4.) of either to the ounce (30.) of lard or other fatty basis (lanolin, vaselin, etc.). A thin stratum of this ointment several times in the day or merely at night may be painted over or well rubbed into a patch denuded of scales. In Vienna a still more energetic effect is secured by using soft soap freely over the patches while the patient is in the bath, then anointing him with tar, and finally returning him to the bath, in which he remains for from four to six hours. For localized eruptions, green soap in combination with tar and alcohol serves a useful purpose, either in the proportion of equal parts of the three ingredients, or by combining them in other proportions, as, for example:

R	Saponis viridis,	℥iv;	120	
	Ol. rusci, }			
	Glycerin., }	āā ℥j;	30	
	Ol. rosmarin.,	℥jss;	6	
	Spts. vin. rectific.,	Oss;	240	M.
Sig.	For external use.			

Other combinations of service are the "liquor picis alkalinus," the formula for which is given in the chapter on Eczema; or Wilkinson's salve, as modified by Hebra, the latter combining the remedial effects of sulphur, tar, and soap, as follows:

R	Sulphur. sublimat.,	}	āā ℥ss;	15	
	Ol. rusci [crud. vel. rectific.],				
	Saponis viridis, }				
	Adipis, }	aa ℥j;	30		
	Cret. præparat.,	℥ijss;	35		M.
Sig.	Wilkinson's salve, modified.				

Where the sensitiveness of the skin to the action of tar has not been tested, or when the skin is particularly tender, a small quantity of the Wilkinson salve may be added to any simple ointment, or Spender's ointment of tar (see the chapter on General Therapeutics) may be substituted; afterward 1 drachm (4.) of the oil of tar, or of oleum rusci, to the ounce (30.) of oil of almonds or of alcohol, may be employed.

When toleration is established the tar may be rubbed over the patches in a pure state with a stiff brush, a procedure preferred in some parts of Germany, after which the patient either remains for some hours in bed, or is powdered with soapstone and bandaged with flannel, so that when the clothing is replaced it may not adhere to the

tar. Naphtalin, ichthyol, and carbolic acid operate in psoriasis in the same way as the tars, but are decidedly inferior to tar.

Absorption of any tarry compound applied externally may result in general toxic symptoms, including fever, vomiting, diarrhoea, strangury, the elimination of the toxic agent in secretions which are blackened by its presence. These symptoms are usually relieved in from twenty-four to forty-eight hours after discontinuance of the drug.

Pyrogallol, first suggested as a remedy for psoriasis by Järisch, is inferior to chrysarobin. The fact that several deaths have been reported as consequent upon the use of this acid deters many from making trial of it in a painless and merely disfiguring disease. It is used in a 10 per cent. vaselin ointment, is effective though less rapid in effect than chrysarobin, is cheaper, is odorless and painless, and it discolors to a less extent the sound skin. Both remedies are capable of being absorbed from the skin-surface, and of producing constitutional symptoms (pyrexia, strangury, and blackish evacuations); but in the case of pyrogallic acid only have fatal results followed.

Kaposi¹ was the first to employ beta-naphtol (the formula being $C_{10}H_8O$) in psoriasis, as also in eczema. It may be applied in alcoholic solution. Following the employment of a 15 per cent. ointment the author reported speedy disappearance of psoriatic patches. It did not stain the skin, hair, or nails.

Crocker, of London, similarly uses thymol in ointment, $\frac{1}{2}$ scruple to $\frac{1}{2}$ drachm (0.66–2.) to the ounce (30.); and Williamson advises turpentine, 2 drachms (8.) to the ounce (30.) of olive-oil, with the odor corrected by the oil of lemon.

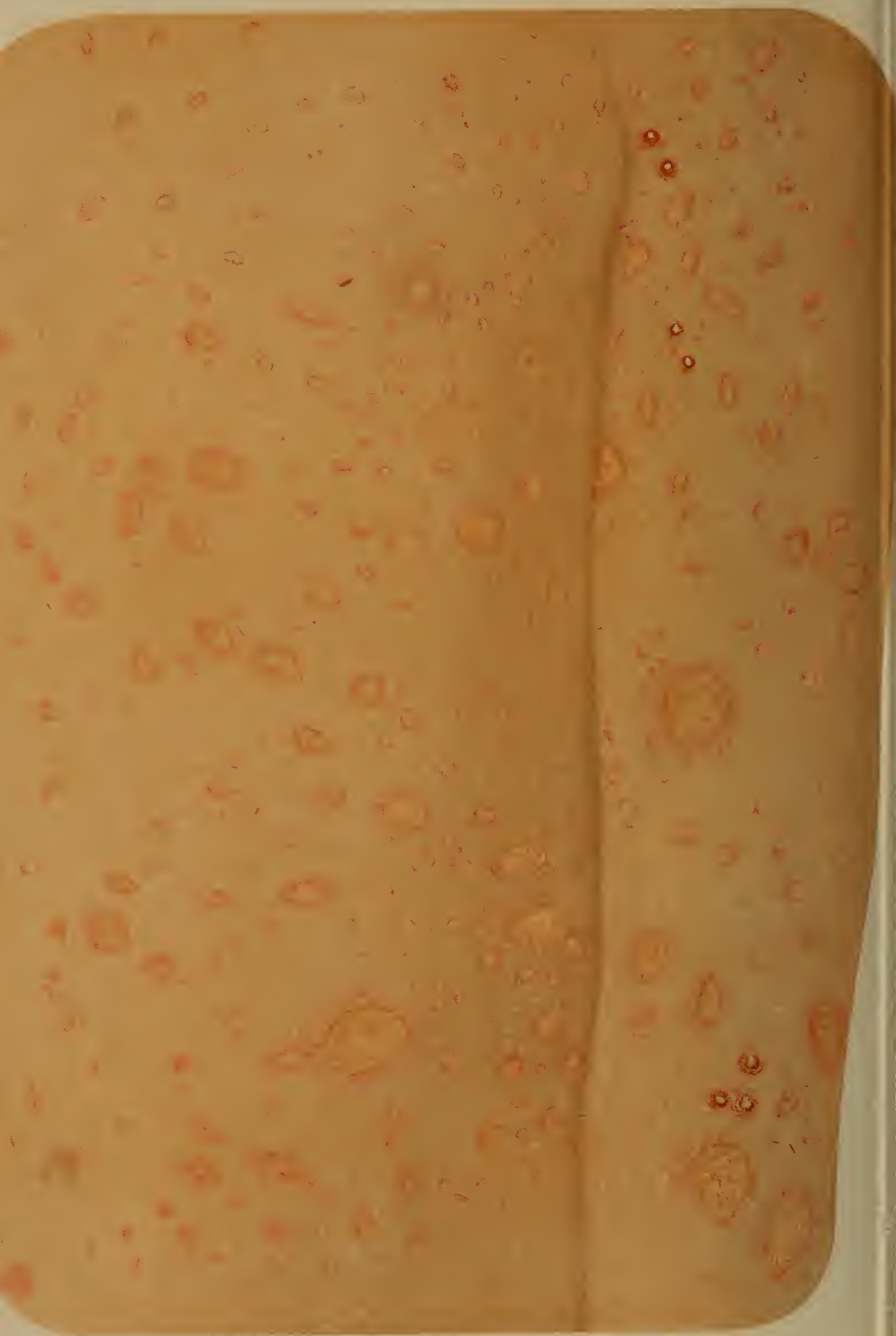
The nitrate, as well as the iodides and oxides, of mercury is applied by many practitioners in the form of ointment to patches of psoriasis usually few in number and limited in extent. The action of these agents, however, is inferior to that of those already named; and the range of their availability being limited, they should be esteemed lightly in the topical treatment of the disease. Other articles more recently vaunted in the external treatment of psoriasis are: thilandin, which seems to possess some value; hydracetin; cacodylic acid; rufigallic acid, 10 per cent. in unguent form; cupric oleate; anthrarobin; and gallacetophenol, 5 to 10 per cent. in salve or in traumaticin.

When practicable, the skin affected with psoriasis should be exposed to the direct action of sunlight in a sufficiently warmed apartment. By this measure alone the skin is often relieved of its eruption.

Prognosis.—The permanent relief of psoriasis is not insured by any treatment of a grave case, though hundreds of patients are permanently relieved by even the simplest treatment. The disease often recurs, and may do so repeatedly for the greater part of a lifetime. Permanent relief, therefore, should never be either predicted or promised in any case. Once relieved, it should be the aim of the practitioner to guard against all possible recurrences. After relief of any obstinate or recurrent attack, as also in all inveterate cases, the prognosis is greatly improved by removal to a climate suitable for the psoriatic patient.

¹ Wien. med. Woch., May 28, June 4 and 11, 1881.

PLATE IV.



Pityriasis Rosea.

PITYRIASIS ROSEA.

(PITYRIASIS MACULATA ET CIRCINATA, HERPES TONSURANS MACULOSUS, PITYRIASIS CIRCINATA. *Fr.*, PITYRIASIS ROSÉ DE GIBERT, PITYRIASIS CIRCINÉ ET MARGINÉ.)

This disorder has been recognized and described by Gilbert, Bazin, Horand, and Duhring. It is non-contagious and benign in its course, lasting from a few weeks to three months.

Symptoms.—The subjects are commonly young adults, but the disease is seen in children and in middle life in both sexes. The outbreak of the malady may be preceded for a variable time by languor, lassitude, inappetence, or a feeling of chilliness. Occasionally the first noticeable symptom is the occurrence of mild fever, the body-temperature rarely rising above 102° F.

The eruption often escapes recognition for a time after its appearance on account of its sparseness or the trifling degree of pruritus it arouses. When fully developed it is characterized by the conspicuous appearance over large surfaces of the trunk, especially upon the integument covering the clavicles, the ribs, and the scapulæ, rarely on the exposed face and hands, of numerous pinhead- to small-coin-sized, circumscribed, roundish or oval-shaped, slightly elevated, macular or maculo-papular lesions. These lesions may be discrete, closely set together, or confluent, and instead of being elevated may be either on a level with the general surface or slightly depressed, with an annular border. They are dry, covered with furfuraceous rather adherent scales, and vary in color from a yellow or tawny shade to a deep red. The infiltration is slight, and the patch is superficially situated.

The fully formed disks vary in long diameter from the width of a finger-nail to three or four centimetres. The oval contour is that more often recognized as characteristic of a well-developed lesion, the long axis of the disk usually corresponding with the lines of cleavage, and the terminal extremities of the oval slightly frayed by the irregularity with which the fine branny scales are there disposed. A tawny, salmon-shade is highly characteristic of the disease, the patch slightly enlarging by peripheral extension, and leaving a relatively clear centre. The scales have often a silvery grayish color. The eruption may be tolerably well generalized, but the face and other exposed parts of the body usually escape, though the scalp may be involved. In the latter event the hairs are unaffected.

The variations exhibited by the exanthem in this affection are distinct, but are scarcely ever sufficient to mask the characteristic appearance of the oval or circular plaques over the neck, the arms, the abdomen, or the extremities, sometimes first appearing over the latter and extending thence to the trunk. At times a retiform expression is given to the picture by coalescence of the patches. There may be moderate itching with nocturnal exacerbation, but the usual type of the disease is mild. Complete involution is usually reached in the course of a week or a fortnight.

Etiology.—The causes of this disease are obscure. According to

Bazin, it occurs chiefly in lymphatic and scrofulous patients. Most cases occur in patients having light hair and delicate skins, who have been enfeebled by great physical fatigue or by overtaxation in school. Profuse perspiration has been assigned as a cause by Horand. Epidemics of the disease have been reported. It is possible the disorder is feebly infectious and allied to the exanthemata.

Pathology.—The histopathology of the disease has been studied by Unna and by Hollmann.¹ The changes begin apparently in the papillary body and the subpapillary layer of the cutis, and include a dilatation of the vessels, perivascular cell-infiltration, and œdema. As the disorder progresses these changes are more marked, especially the perivascular cell-infiltrate. The rete shows decided intracellular and intercellular œdema and proliferation of the prickle-cells, especially in the interpapillary portions. As the disease approaches its acme minute vesicles, not visible on macroscopic examination, form beneath the horny layer, which later is exfoliated.

Diagnosis.—The disease is to be differentiated from ringworm of the body by the absence of vesicles, the tendency to symmetrical distribution of the lesions, their multiplicity, the characteristic yellowish centre of the oval rather than circular patch, and the constitutional symptoms. Psoriasis differs greatly in the color, quantity, and character of the scales present, and in the contour of the patch. In the scaling syphilodermata, the region of the body involved, the presence of plantar and palmar lesions, the constitutional symptoms and history, and the color of the patch, which is usually of a deeper and dirtier red than in the disease under consideration, will point to the diagnosis. In the macular syphiloderm ("syphilitic roseola") the closer proximity of the lesions will point at once to the difference, since the patches of pityriasis rosea are, as a rule, far more widely separated. The greasiness of seborrhœic scales and the pallid hue of the integument beneath when the former are removed differ from the congested skin beneath the dry scale in this form of pityriasis.

The **Treatment** is expectant. Quinine, sodic salicylate, and, later, ferruginous tonics are indicated in most cases. Locally, tepid bathing in an alkaline or bran-bath is usually grateful. This bath is to be followed by the application of a dusting-powder.

DERMATITIS EXFOLIATIVA.

Some confusion, both as to the names of diseases and as to the diseases themselves, has existed in connection with the subject of all generalized exfoliative cutaneous disorders. More investigation is needed before definite limits can be established for several of the dermatoses of this class. By some, the term "dermatitis exfoliativa" is held to be synonymous with pityriasis rubra. In these pages pityriasis rubra is distinguished as a distinct disease, and dermatitis exfoliativa is made to include the exfoliative and exudative disorders of the skin not properly considered in any other connection.

Classing these forms of exfoliative dermatitis together as for the

¹ Arch. f. Derm. u. Syph., 1900, Band li., Heft 2.

most part of acute type, and distinguishing the chronic forms from the pityriasis rubra of Hebra, it may be said of them all that they present features of wide diversity. At one time exfoliative dermatitis begins and ends in a single patient as a well-defined, distinct, and specific disease with mild symptoms, pursuing a definite career, and of benign type; in another case it occurs as a sudden or a gradual change in a preëxisting disorder, such as an eczema or a psoriasis (Gamberini); again, beginning in one or another of the simpler forms described above, it may become chronic, and in its symptoms and appearance be indistinguishable from pityriasis rubra.

Symptoms.—Exfoliative dermatitis is usually ushered in with mild febrile symptoms, which are often preceded by malaise, languor, or a variable period in which the general health has been impaired. Often, however, all prodromata are absent.

The eruptive symptoms are a more or less shining and vivid redness of the skin in one or several plaques which become in the course of a week the seat of numerous fine bran-like scales. Any region of the body may be affected, though the articular folds of the skin, the genital region, the head, and the trunk are most often the seat of the disease, which may involve consecutively one part after another until in a week or a fortnight the whole body-surface is invaded. The affection may be limited to one region, or several distinct regions may simultaneously be involved, as the head and the lower limbs, or the thorax and the external genitals. The hands and the feet are usually the last to be invaded. The eruption may appear in reddish patches of well-defined or of very indeterminate outline. The skin affected may be slightly or apparently not at all infiltrated and raised. The itching may be slight or be severe. The redness displayed in the regions affected with scaling may be of the brightest crimson, “erysipelatous,” violaceous, or purplish shade, or with a faint suggestion of yellowness. The scales, which are usually formed in abundance, are commonly seen loosely covering the reddish integument upon which they rest, though they are also shed in profusion when the affected surface is lightly swept with the hand. They are always whitish, minute, and bran-like, never in the so-called “pastry-crust” condition of the scales in pemphigus foliaceus.

In well-marked cases the features may be slightly disfigured by tumefaction of the lips, swelling of the ears, and puffiness of the eyelids. In all cases the skin is dry and is rarely moistened with a pathological discharge. The scales are always white, imbricated, and silvery in hue; they are usually larger and coarser upon the lower limbs than over the neck, face, and chest.

In the course of the disorder the hairs may fall, and in some cases the resulting alopecia is general. When the nails also are lost there is rarely any special preëxisting onychia. The mucous surfaces of the eyes, nose, mouth, and throat may participate in the general disorder and become the seat of inflammatory and, in rare cases, even of pseudo-membranous and exulcerative processes.

Itching may be absent; when present and severe it is relieved even before the complete restoration of the integrity of the skin. The itch-

ing may recur with each relapse, at which time also the fever is usually relighted.

In most cases the disease is terminated in the course of two or three months, after which convalescence from the emaciation and possible complications (furunculosis, abscesses, etc.) may require an equal length of time. Pigmentation is always present for some time after recovery.

Etiology.—The cause of the disease is not known. It is often accompanied or preceded by an acute or chronic toxæmia. Chronic forms of exfoliative dermatitis may follow extensive cases of psoriasis, lichen planus, or pityriasis rubra pilaris.

Pathology.—Brocq¹ has made a study of this disorder, and his results are in part confirmed by Vidal and Baxter. These observers recognized an infiltration of the papillary layer of the corium with embryonic cells, dilatation of the papillary and subpapillary vessels, horizontal flattening of the prickle-cells, disappearance of the stratum granulosum and stratum lucidum of the epidermis, and the appearance of nuclei in the cells of the stratum corneum. According to Quinquaud,² a diffuse myelitis and parenchymatous neuritis of cutaneous nerves may be responsible for these changes.

Diagnosis.—Exfoliative dermatitis is to be distinguished from pityriasis rubra by the variety of its symptoms and course; from pemphigus foliaceus by the absence of bullæ and grave systemic trouble; and from scarlet fever by the absence of sore-throat and by a much more tardy evolution. Though in general a disease having a cyclical career and special characteristics it may at times be lighted into activity by a diffuse psoriasis of acute type, or by a squamous eczema becoming generalized. In such cases the diagnosis is qualified by the preëxisting disorder.

Treatment.—The disease may be mitigated by any medicament which induces profuse sweating; hence, both jaborandi and pilocarpine have been employed with success. Quinine, sodic salicylate, cod-liver oil, and the mineral acids are often indicated. The strength of the sufferer is always to be supported by appropriate measures. Hebra's diachylon ointment, 1 part to 4 of vaselin, with from 5 to 10 grains (0.33–0.66) of salicylic acid to the ounce (30.) of the whole, is usually grateful to the skin. One of the combinations of lime-water, olive-oil, and zinc oxide, described in the treatment of eczema, may, however, be employed locally.

Prognosis.—The disorder may prove fatal in exceptional cases; generally, however, recovery may be expected. Often convalescence is tedious, protracted, and complicated by the occurrence of furuncles and cutaneous abscesses.

DERMATITIS EXFOLIATIVA INFANTUM.

(KERATOLYSIS NEONATORUM.)

Under this title Von Rittershain³ and others have described an exfoliating non-contagious disease of the skin in infants from six days

¹ Arch. gén. de Méd., 1884.

² Bull. de la Soc. anat., 1879.

³ Centralzeitg. f. Kinderheilk., 1878, Bd. ii. Dorland: Phila. Polyclinic, Sept. 26, 1896.

to five weeks old, the disorder continuing from seven to ten days. It develops as an erythema, at times as a vesico-bullous dermatosis, with dryness of the skin, from which branny scales are abundantly exfoliated, leaving a peculiarly dry, reddish, and fissured integument beneath. The angles of the mouth and the mucous outlets generally are specially involved. Often buccal lesions are present. The face, the buttocks, and the limbs are chief seats of the disease. The malady lasts for about one week and is unaccompanied by fever; it occurs more often in boys than in girls. In severe cases crusts form where rhagades exist, and there are considerable pain and constitutional disturbance. Occasionally the skin is attacked by furunculosis after the disease has existed for a week. Relapses are common, but recovery occurs in most cases.

The **Treatment** is by soothing applications to the cutaneous surface.

Prognosis.—The mortality is grave when the disorder induces marasmus, diarrhœa, or pneumonia.

PITYRIASIS RUBRA.

(Gr. *πίτυρον*, bran.)

(DERMATITIS EXFOLIATIVA. *Ger.*, ROTHKLEIE; *Fr.*, PITYRIASIS RUBRA AIGU.)

Symptoms.—This disease is characterized by a superficial hyperæmia and inflammation of the skin, declared in patches or by a diffuse redness of a vivid or lurid tint, and by an abundance of small or large, lamellated, bran-like scales, which are continuously exfoliated from the epidermis throughout the course of the malady. Patients rarely present themselves for observation until a considerable portion of the body-surface is involved; but Kaposi states that in two patients observed by him the disease was first noticed in the neighborhood of the articulations. There are never at any time other lesions of the skin, betrayed in vesiculation, pustulation, moisture, or crusting. The palmar and plantar surfaces are usually less distinctly reddened than the face and the extremities, having at times even a pallid hue, but they are always covered with a scaling epidermis.

Under pressure with the finger the redness subsides or assumes a yellowish shade, while, as a rule, when the integument is gathered up between the finger and thumb, no infiltration can be recognized. Exceptions, however, have been noticed by several observers.¹ The temperature of the skin is slightly increased. The exfoliation, as the disease progresses, is one of its most striking characteristics, the scales accumulating in large quantities in the clothing of the patient, who is engaged, as a French writer has it, in the labor of stripping himself involuntarily of his epidermis.

The disease persists for months or for years, being always more severe in expression as it advances, the papery scales being shed more abundantly and in larger flakes, leaving a smooth, shining, occasionally purplish or even cyanotic skin. In the patients observed by Jamie-

¹ We have reported one such case. Cf. "Pityriasis Rubra," *Chicago Med. Jour. and Exam.*, Feb., 1881.

son,¹ the skin was so dark hued as to suggest the color of a mulatto. Gradually the patient becomes conscious of an increasing sense of chilliness, as if deprived of sufficient body-covering. The itching may be absent, be moderate, or be severe. There may be instead sensations of stiffness, burning, and tingling. Later the integument seems to retract, as if it were insufficient to encompass the body, and becomes subject to fissure from extension and contact, while the lower extremities may be œdematous. This retraction may be so marked that ectropion of the eyelids may ensue, and wide opening of the mouth may become difficult. The hairs and the nails lose their lustre and become friable, and the hairs often fall though the nails may escape.

The influence of this epidermal catarrh, involving, as it does, finally, every portion of the body-surface, does not fail toward the end to be felt by the vital forces. Alternating chills and febrile processes, pneumonia of a low grade, colliquative diarrhœa, tuberculosis, subcutaneous abscesses, bedsores, and even gangrene of the skin may close the scene.

Hebra and Kaposi together had under observation "about fifteen" patients affected with pityriasis rubra, who, with a single exception, died from its effects. It will thus be seen that the disease is rare. A few cases have been reported by British authors. Among Americans, Duhring, George H. Fox, of New York, and one of us, have published reports of cases. We have had under observation in all six typical instances of the affection. The disease is one of early or of middle life, and affects preëminently the male sex.

The progress of the disease is either rapid or slow, lasting for years and at times ending with relative rapidity. In the course of a few days after its onset the entire body may be covered with the exanthem; yet when the disease is of long duration it may be at times partial and at other times general in distribution. There are no red points visible as in other forms of scarlatinoid-shaded eruption, and the color when the palms and soles are involved only appears after the thick epidermis of those regions has been shed. Sweat may or may not be secreted in the course of the disease. The tongue is bright red in the early stages; later it is covered with a brownish crust; it occasionally undergoes exfoliation. There may be a secretion from the skin which at times stains the linen. Rhagades may form, especially in the palmar and plantar regions. While in the instances of this disorder first described in Vienna there was no infiltration of the skin, this change has been observed in other typical instances, but usually not deeply implicating the corium. The nails may be separated, tilted up from the nail-folds, softened, thinned, fissured, "worm-eaten," or otherwise altered. The chief systemic symptoms recorded are: languor, chilliness, and even severe rigors alternating with febrile temperatures of recurrent type, albuminuria, diarrhœa, pulmonary œdema, icterus, interstitial pneumonia, bronchitis, and rheumatism.

The cases reported by English authors are mostly instances of exfoliative dermatitis following lichen ruber, eczema, psoriasis, and other simple dermatoses. To this class in particular belong the patients

¹ Edinburgh Med. Jour., April, 1880, p. 879.

reported as suffering from repeated attacks of the disease; and those also in whom the affection is limited to but few regions of the body, such as the palms and soles.

Etiology.—The causes of the disease are unknown. It will be seen that the fewness of cases which have been recognized has restricted the field for the study of the malady. It is more common in men than in women, and in adults rather than in children. The cutaneous phenomena are due in each case to some constitutional disorder which in the early stages frequently presents no other symptoms than those manifested on the skin, the patient being apparently in good general health. Visceral troubles are recognized chiefly at a late period of the malady, when it would appear that the cutaneous mischief is sufficiently extensive to induce them. The wide range of these disorders suggests that the cutaneous disease may result from a number of visceral maladies.

Pathology.—The researches of Hans Hebra¹ demonstrated in two cases that in the earlier period of the disease there is an infiltration of the integument moderate in degree, succeeded at a later period by cutaneous atrophy, in which the rete and papillæ of the corium disappear. The connective-tissue elements undergo sclerosis; and the glands and the follicles of the skin are destroyed. Pigmentation is abundant.

Both Hebra and Fleischmann discovered coincident pulmonary, intestinal, or cerebral tubercloses; and Kaposi, in one post-mortem examination, established an atheromatous condition of the arteries.

Baxter,² in a patient examined by him, discovered no trace of the stratum granulosum, nor was the stratum mucosum completely separated from the stratum corneum. There was a gradual transition from the polygonal prickle-cells below, which readily stained, to the horny cells above, which remained colorless. Flattened and faintly stained nuclei lay parallel with the surface, and they could be recognized even in the enormously hypertrophied stratum corneum. The papillæ were enlarged; the rete-pegs had pushed deeply into the corium. The prickle-cells of the hair-sheaths were multiplied. The remarkable consistency of the thickened corium at the outset of the disease was regarded as chiefly due to a fluid exudate, which was observed before death.

Myelitis was discovered in one case by Jamieson, who has been followed by others in the recognition of central and peripheral neurotic alterations.

Jadassohn found a round-cell infiltration of the papillary body and the subpapillary tissue, with increase of the nuclei of the fixed connective-tissue cells. The significant features of the process, as Unna points out, are: the persistent hyperæmia, the widespread pigmentation (possibly associated with the former), and the consequent atrophy and tension of the integument.

Diagnosis.—Many cases reported as instances of pityriasis rubra are not really such. The misinterpreted symptoms are often those of an unusually extensive psoriasis or a chronic squamous eczema, which commonly terminates favorably in the course of proper treatment.

¹ Vierteljahr. f. Derm. u. Syph., 1876, Heft 4, S. 508.

² Brit. Med. Jour., 1879.

In lichen ruber the essential lesion is a papule, which even in the later extensive scaling of that disease usually may be recognized in some part or another of the infiltrated skin.

Psoriasis rarely extends over the entire surface of the body, but at times it is thus generalized. In these exceptional forms a long history of the occurrence of typical psoriatic patches may usually be obtained, while the bleeding surface beneath the scales and the character of the latter will point to the true nature of the disease. Psoriasis occurs in healthy, pityriasis rubra in cachectic, constitutions. Extensive erythematous or squamous eczema, apart from all other symptoms, can be recognized at once by the excessive distress occasioned by the eruption. The patient lies in bed nursing his or her tender limbs, back, or belly. In the early stages of pityriasis rubra the patient may rise, dress, and move about with an expression, not of pain, but of listless apathy. His scales are not scanty and adherent, but are abundant and exfoliate freely. There is, from first to last, no history of moisture. In every generalized eczema, at one point or another, there always will be a surface which weeps. In its early periods pityriasis rubra can be distinguished from pemphigus foliaceus by the absence of bullæ and of the intolerable stench which is often emitted by the sufferer. When, however, there is present merely a generalized exfoliative dermatitis the two disorders may well-nigh be indistinguishable.

Treatment.—Arsenic administered internally seems powerless in pityriasis rubra. Cases are on record of fatal results after the exhibition of this drug in prodigious quantities for long periods of time. Tar externally promises no better result. Kaposi reports a single patient relieved by the use internally of carbolic acid. Thyroid extract may be tried in chronic cases.

A roborant treatment, including the employment of cod-liver oil, iron, or quinine, is generally indicated, with externally the simplest bland unguents, of which vaselin seems best tolerated. It should be employed, not merely to soothe, but also to protect the skin. The clothing should be ample and unirritating, and the diet selected with a view to supporting the strength.

The **Prognosis** is necessarily grave.

PITYRIASIS RUBRA PILARIS.

(LICHEN-PSORIASIS. *Fr.*, PITYRIASIS RUBRA PILAIRE.)

This affection has chiefly been described in France by Devergie, Besnier, Richaud, and others. The museum of the Saint Louis Hospital is provided with illustrations in wax of every phase of the malady. In other countries it has until recently either been described under a different name or has wholly been ignored. Cases of the disease in considerable number have come under the observation of experts in America in the past few years. It is claimed that the malady is identical with the lichen ruber acuminatus of Hebra.

Symptoms.—The disease commonly appears as a seborrhœa sicca of the hairy scalp, with and without palmar and plantar scaling

PLATE V.

Fig 1.



Pityriasis rubra pilaris.

Fig. 2.



Pityriasis rubra pilaris.

patches, though the face may be first to exhibit the signs of the affection. The eruption may be preceded by malaise, insomnia, hyperæsthetic symptoms, or by a feeling of stiffness in the skin. The first symptom is usually the occurrence of very fine desquamation; soon there appear over the surfaces of the fingers, hands, forearms, elbows, knees, waist, or belly, minute papules, firm, dry, and silver white, reddish brown, or rosy yellow in color. Each of these papules has evidently been pierced by a hair, and about its apex where thus traversed by the pilary filament there is a delicate sebo-corneous sheath which penetrates the hair-follicle for a short distance. These papules may be as minute as a millet-seed or larger, but are never of the size of a split pea. They become more and more numerous, and appear at times to coalesce, and may form a patch covered with fine elevations—conical and discrete; or may be lost in the general scaling, exfoliating, erythematous, and shining area. The apex of each conical elevation may display an unbroken hair or a mere stump of the same, or a black point, the surface presenting then the appearance of the shaven beard. The yellowish-red or deep-reddish patches may be the seat of pityriasic scaling, or may exhibit separation of the epidermis in large, adherent flakes, which especially over the elbows and the knees present the appearance of psoriasis. Commonly at the borders of these patches are found the initial papules of the affection, still isolated and surrounding characteristic stumps, filaments, or black points of hairs, enabling one thus to make the diagnosis with ease. At times the eruption is generalized; when the face is chiefly involved the slight crusts formed are decidedly of the type of those described under *Eczema Seborrhœicum*. In many cases the tension of the skin which results produces ectropion of the lower lid. Occurring over the hairy scalp, the accumulated scales and crusts may form a dense and resisting cap which is difficult to remove. The nails are usually grayish, yellowish, longitudinally striated, and roughened. There may also be a coincident polytrichia. Important for purposes of diagnosis are the little horny, blackish, conical papillæ occupying the sites of the hair-follicles on the dorsal surfaces of the first and second phalanges of the fingers. These usually remain distinct even when the hands are completely invaded. The course of the disease is chronic, irregular, and subject to relapses and unexpected aggravations. The general health may remain unimpaired; the itching is slight.

Etiology.—The cause of the disease is unknown. It occurs rather more often in the male sex, but has been observed at all ages in both sexes.

Pathology.—According to Jacquet, the papule, which is the essential lesion of the disease, represents merely keratinization to an unusual degree of the epithelial lining of the superior portion of the hair-pouch. All the other changes in the skin are subordinate to the epidermal affection. Besnier recognizes four types of the disorder, three of which are probably represented by somewhat differing processes in the corium and epidermis. These types are: the sebaceo-squamous, or pasty form; the reddish, or pityriasic; the xerodermic, in which the condition resembles that known as “goose-flesh”; and lastly, a “mixed”

form. It is in these clinical pictures that the process, if it be in fact unique, may best be recognized, for in them are represented the familiar changes seen in eczema, psoriasis, keratosis (lichen) pilaris, xerosis, ichthyosis, and possibly a few other affections of the skin attended with keratinization of the epidermis.

Diagnosis.—The disease is to be differentiated from all others by the characteristic papule pierced by the shaft, or segment of shaft, of a hair. In extensive cases of long standing the identity of the papules may be lost in the general scaling process over most of the body; but in nearly all cases they can be recognized on the backs of the fingers, as described above. Ichthyosis is congenital; pityriasis rubra is more frequently generalized, and is a grave disorder affecting the general health; while pityriasis rubra pilaris does not always interfere with the systemic condition. The disease is by many supposed to be identical with lichen ruber acuminatus. For the differences between the two maladies the chapter on the last-named disease may be consulted. Psoriasis is never characterized by papules with hair-filaments in the centre.

Treatment.—The remedies hitherto found most useful in the local management of this disorder are those valuable in the management of psoriasis and squamous eczema. Tar, pyrogallol, chrysarobin, resorcin, salicylic acid, and the mercurials, with lotions of Van Swieten's liquor, are advised, and, when an inflammatory effect is produced, the employment of soothing lotions and salves. Fatty crusts, when these are abundant, are to be removed by shampooings, as in seborrhœic affections of the scalp. Internally, arsenic, cod-liver oil, and carbolic acid have occasionally proved advantageous. Brocq recommends for internal use sodium arseniate in increasingly large doses, but no single remedy is known to be efficacious when administered internally.

The **Prognosis** is usually favorable.

EPIDEMIC EXFOLIATIVE DERMATITIS.

[EPIDEMIC SKIN-DISEASE (SAVILL).]

During the summer and autumn of 1891 an epidemic disorder with cutaneous symptoms developed in several London asylums, infirmaries, and hospitals, affecting about five hundred patients. The disease was studied with special care by dermatologists and medical men. The brief sketch given below is based upon an excellent monograph with colored and photographic illustrations by Savill,¹ on various communications made on the subject in the columns of the *British Medical Journal* and the *London Lancet* for 1892, and on the description given by Crocker in his treatise.

The disease occurred in two distinct clinical types, one with catarrhal exudation from the skin, resembling the moist forms of eczema, the other dry and non-discharging, resembling pityriasis rubra, and, according to Crocker, indistinguishable from that disease.

¹ An Epidemic of Skin-disease resembling Eczema and Pityriasis Rubra, by Thomas D. Savill, etc. London, 1892.

The eruptive features were apparently not preceded by prodromata, but gastro-intestinal disturbance (vomiting, diarrhoea), and in some cases sore-throat, either preceded or accompanied the appearance of the dermatosis. Except in patients of advanced years, there was usually post-occipital and cervical adenopathy, not to be explained as sympathetic with a cephalic eruption. The regions most frequently involved were the upper limbs, the scalp, and the face; the lower limbs less frequently.

The skin-lesions were pruritic, and were irregularly grouped, acuminated papules, with a follicular site.

The stages of the exanthem, as given by Savill, were :

a. A papulo-erythematous stage, lasting from three to eight days, in which shot-like papules were felt beneath the skin, were discrete, and were seated on a reddened, thickened, even an indurated or oedematous integument. In some cases the onset was in the form of marginate and circular nodose patches, resembling those seen in erythema nodosum; in a few cases the resemblance was to ringworm, flattened papules enlarging to a circinate annular group with minute central vesicles readily ruptured.

b. An exudative stage, lasting from three to eight weeks, in which macules, vesicles, or papules soon formed a confluent eruption, the skin being of crimson hue, thickened, and scaling in flakes or in lamellated crusts in consequence of the exudation. In the moist type the papules developed to vesicles with exudation; in the dry type the exfoliation occurred in pure scales, parts of which in some cases could be collected from a patient's skin in a day. In other cases this exfoliation was in the form of an impalpable powder; it was characteristic of all well-marked cases.

c. A stage of subsidence, in which the disease proceeded to involution, leaving the skin at first indurated, polished, and brownish in color. In many cases the new skin was raw and parchment-like, smooth, shining, and readily fissured, resembling in this respect ichthyosis. In a few instances ectropion resulted, as a sequel of conjunctivitis. In severe cases the hair and all the nails were shed. There was a mortality of from 5 to 13 per cent., death resulting from exhaustion with the usual signs of subsultus, shallow respiration, and coma. Complications occurred with pneumonia, gangrene, and albuminuria. A few of the attendants upon the sick (children and patients of somewhat older years) were attacked; but for the most part the patients, and especially those succumbing to the disease, were individuals of advanced years of both sexes, inmates admitted for the management of other disorders in the institutions in which the disease prevailed.

The **Etiology** of the disease was not satisfactorily determined. Cocci were isolated and cultivated by Savill and Russell, but the etiological importance of these micro-organisms is yet to be demonstrated. The influence exerted upon the disease by parasitocides was beneficial to a degree; but this treatment on the whole was unsatisfactory and chiefly amounted to amelioration of the conditions of the skin.

PARAKERATOSIS VARIEGATA.

Under this title Unna¹ and his assistants described two cases of patients affected with a dermatosis supposed to be idiopathic, the disease occurring in the form of yellowish, reddish, or empurpled macules and flat papules constituting an eruption lasting several years, and at first affecting the neck, the chest, and the lower limbs; later involving the entire surface of the body with the exception of the head, the palms, and the soles. The infiltrated patches, which at times contrasted with apparently sunken areas of the intervening sound skin, were the seat of a pityriasic desquamation, were distinctly circumscribed, and were somewhat variegated in color, suggesting the name adopted in describing the affection. Beneath the scales the surface was smooth and brilliant.

LICHEN RUBER.

(Gr. λειχήν, moss.)

(LICHEN RUBER ACUMINATUS, LICHEN EXUDATIVUS RUBER, LICHEN PSORIASIS, PITYRIASIS RUBRA PILARIS. *Ger.*, ROTHE SCHWINDFLECHTE.)

Under the term lichen ruber, Hebra was first to describe the disease which is now recognized under this title. It is a malady rare of occurrence, and is more often recognized on the continent of Europe than elsewhere. Its exact relations to lichen planus and to pityriasis rubra pilaris have been the subject of discussion, the results of which have not yet settled all the questions at issue. In these pages the disease is described as it exists in Europe, while the chapter devoted to Lichen Planus is designed to portray this affection as it exists in America and as it has been investigated by American observers.

Symptoms.—The disease is characterized by the appearance, without prodromal symptoms, of isolated, pinhead-sized, conical, reddish, scale-capped papules of considerable firmness, bright red or livid in hue, and disseminated over the belly, the chest, the genitalia, the extremities, and other portions of the body. In another form of the disease these lesions are lighter in color, each with a smooth surface, a small central depression at the apex, and a waxy appearance. The “nutmeg-grater” effect is usually produced when the finger is passed over them. The itching excited may be mild or be severe; it bears no relation to the extent of the exanthem.

The papules rapidly multiply, forming patches which, by aggregation rather than by coalescence, cover large areas of the body, and, lastly, its entire surface. Throughout the course of the disease individual papules do not enlarge at the periphery, but they persist as such until they are lost in a diffuse, dull-red, infiltrated patch, covered with thin, papery, grayish non-adherent scales, beneath which the orifices of the hair-follicles are seen to be dilated. Occasionally at the border of a patch thus formed, isolated, shining, flattened, or umbili-

¹ Monatseft. f. prakt. Derm., 1890, vol. xi.

cated papules persist or form circles of densely packed lesions, surrounding groups in which involution of the lesions progresses, leaving pigmented and atrophic areas within. At this stage of the disease the resemblance of the symptoms to those displayed in pityriasis rubra pilaris is so striking that some authors (Kaposi included) make no distinction between the two.

Whether in the form of lesions last described, or after irregularly disposed disseminated patches have been developed, the entire integument becomes eventually the seat of extensive infiltration, reddening, and scaling. As a consequence fissures form and the distress of the patient increases. Bullæ are occasionally observed.

The skin of the face cracks; the eyelids are everted or are thickened; the skin of the palms and soles is converted into a leathery tissue; the nails become friable and irregular; motion at the joints is excessively painful on account of the inelasticity of the skin covering the articulations; the hairs are thinned and fall; the extremities are maintained in a position midway between flexion and extension. The integument is now universally reddened, is covered with innumerable delicate or with coarse scales, and, especially upon the palmar and plantar surfaces, is thickened by dense infiltration. Over the deeper fissures, extending to the corium, form blackish and blood-containing crusts. Emaciation progresses *pari passu* with the invasion of the disease, and death may result from exhaustion, intercurrent diarrhœa, or pneumonia.

LICHEN RUBER PLANUS (as a variety of lichen ruber acuminatus) is regarded by most writers as identical with lichen planus. Minute yellowish to reddish, firm, dry papules, irregular, differing in shape but often polygonal in contour, and varying in size from that of the minutest lesions to those as large as a pinhead, rise from the affected surface of the skin, often at the site of a hair-follicle whence the pilary filament has disappeared. Desquamation does not occur, as a rule, while these lesions are isolated; when confluent there may be considerable scaling. The itching may be mild or be of the intensest grade.

The eruptive symptoms may persist in discrete form as at the outset, the exanthem spreading by multiplication of new lesions until the entire surface is involved. At points there may be confluence with formation of a flattish elevated plaque, light or dark reddish in hue, and irregular in outline, with considerable infiltration of the integument. Grayish scales are then produced, often with whitish striæ radiating from the patch. Annular bands and also other figures which may be geometrical in contour are thus formed. Occasionally there are vesicles and vesico-pustules. Deep pigmentation may succeed complete involution of the disorder. The wrists, the forearms, the belly, the lumbar region, the inferior extremities, and in men the genital regions, are most often involved.

The variations of the affection are: an extreme grade of exfoliation of the epidermis in large plates from a raw, reddish surface fringed with reddish or yellowish scales. On the palms and soles the lesions may closely resemble a syphiloderm of these parts, even to the minute pits or depressions whence the epidermis has fallen. In occasional cases, according to Brocq, the papules exhibit blackish points in

the centre corresponding with the orifices of coil-glands. The disorder may affect also the mucous surfaces, as is described in the following chapter. The disease even may progress for months or for years without marked modification; or, on the contrary, the evolution may be rapid, the eruptive elements large, the skin greatly infiltrated, the sheets of eruption vast, and the general distress great. Bullæ and vesicopustular lesions are observed in rare cases.

MIXED FORMS are reported, in which all the symptoms of lichen ruber acuminatus and lichen ruber planus have been exhibited in one patient. In some instances the one form of disease has been noted to precede; in yet other cases another form. Cases are recorded in which all the lesions of typical lichen ruber acuminatus and planus have been observed coincidentally in one patient.

Unna has attempted to create yet another clinical variety of lichen ruber, under the title *LICHEN RUBER OBTUSUS*.

In a first variety the lesions are semicircular, pea-sized, flattened, polished, waxy papules unprovided with scales, having a bluish-red or brownish-red depression in the centre. The itching is usually intense, the papules may coalesce, and the eruption may become generalized. Pigmentation has been observed after involution is completed. Occasionally cicatrices have formed.

In a second variety, the corneous form, the papules are large and are seated for the most part on the extremities. The itching is intense. As individual lesions increase in size the tinting becomes brownish, and over these elements form small, grayish, dry, adherent scales, which give a cornified aspect to the surface. Some of the papules persist without coalescence throughout the attack.

These two forms are evidently merely clinical variations of the disorder described fully by authors.

LICHEN RUBER MONILIFORMIS (Kaposi) is an odd-looking disorder (of the lichen ruber class), in which numerous node-like masses are arranged in lines and chains resembling a jewellers' necklace, with flattish, punctiform papules between the nodes, and macules of a sepia-brown hue between the lesions.

Etiology.—The cause of the disease is unknown. Both sexes seem to suffer in equal proportion, though it is claimed that more men than women are affected. The disease is transmitted neither by heredity nor by contagion. In those who display the symptoms of the affection external irritation is capable of aggravating the eruption. The disease is chiefly encountered in middle-life, from the tenth to the fortieth year, but it has been observed as early as the eighth month. It is probably a trophoneurosis. Cases have been reported following traumatism and shock. Well-marked instances of the disorder have been recorded in persons otherwise healthy. Lassar discovered minute bacilli in the lymph-spaces, but they have not been shown to be the cause of the malady.

Pathology.—Lichen ruber is a paratypical keratosis of the superficial portions of the stratum corneum. It is characterized by hypertrophy of the stratum corneum and by incomplete corneous transforma-

tion of the individual elements of that layer, which are larger and more polygonal, a feature most noticeable about the sweat-ducts and the hair-follicles. The rete is in places enlarged in consequence of cell-infiltration, and in places is normal. The upper portion has an uneven appearance, as the interpapillary portion pushes slightly downward, and the increase in size of the other parts is more marked. The papillæ are increased in dimensions, and their blood-vessels are dilated and surrounded by corpuscles. The walls of the sweat-ducts are formed of large cells with vesicular nuclei; corneous cells are heaped also about the orifices of the hair-follicles; the muscle-bundles are much hypertrophied.

Diagnosis.—In psoriasis the discovery of a typical scaling patch, often with a clearing centre, should suffice for recognition of that disease. The scaling in diffuse psoriasis is also much more abundant. In papular eczema the lesions do not persist as such. When these two affections are generalized it is claimed by French observers that there is always some one area, however small, of unaffected integument. This unaffected area is not to be found in generalized lichen ruber; but in such generalized cases the distinction between that disease, pityriasis rubra, or dermatitis exfoliativa may be extremely difficult if at all practicable. At an early period papules are not seen in either of the last-named two disorders. The papules of syphilis never scale so generally as those in lichen ruber: moreover, they increase in some cases to double their original size, and are always accompanied by some other symptom of that disease. In the scaling stage of pemphigus foliaceus there are bullæ present or there is a history of these lesions preëxisting.

Lichen ruber is to be distinguished from pityriasis rubra pilaris by the non-limitation of the former to the orifices of follicles; by the later period of its scaling; by its deeper involvement of the skin; by its greater diffusion over the extensor surfaces of the body; by its severe grade of pruritus; by its involvement of the general system; by its frequent grave issue; by the deep pigmentation remaining; and by its occasional involvement of the mucous surfaces.

Pityriasis rosea is a much more superficial and a milder affection; its scales are fewer; its rarer papules are smaller, and they occur chiefly at the periphery of its oval patches.

Treatment.—Arsenic, which is of great value, can be employed with large chances of success in lichen ruber. This drug is early to be given, and persistently pushed notwithstanding new crops of lesions until the desired result is obtained, and to be continued for several months after all signs of the disease have disappeared. Tonics, when indicated, should always be exhibited. The diet should be generous.

External treatment is employed chiefly for the relief of pruritic sensations. Dusting-powders and ointments prove serviceable. The local remedies employed in corresponding stages of eczema may, in brief, be here used with advantage, such as alkaline, starch-, or bran-baths, followed by inunction of the skin with salves containing thymol, salicylic acid, zinc oxide, bismuth subnitrate, carbolic acid, or benzoin.

Prognosis.—The prognosis of the disease when it refuses to yield

to treatment and tends to become generalized is necessarily grave. Treatment after the occurrence of marasmus will often prove ineffectual. The disease is said to be occasionally amenable to energetic treatment before it has advanced to the stage of inducing systemic exhaustion.

LICHEN PLANUS.

(Gr. *λειχήν*, moss; Lat. *planus*, flat.)

(LICHEN RUBER PLANUS.)

Since the date of the first description (1869) of this malady by Sir Erasmus Wilson it has been the source of considerable discussion due to the confusion which has existed in different countries respecting the question of its identity with or distinction from lichen ruber planus. Lichen planus at one time was rarely reported in America, but it is now among the affections occupying a second rank after those of most frequent occurrence.

Symptoms.—The elementary lesion of every classically developed eruption is a flat-topped, polygonal papule which, when studied in different positions so that the light falls aslant upon the surface, exhibits a characteristic glistening or shining top of each papule shown in no other eruption.

The papules exhibit a peculiar crimson or purplish shade, and when the eruption is plentiful this color is so characteristic that by it alone in a well-marked case the eruption may be recognized by the eye before individual lesions can be identified. The papules vary in size from the head of a small pin to the larger lesions (*e. g.*, of so-called “lichen planus obtusus”), in which the papules may be as large as peas or beans, and may even assume an annular form or may exhibit about the flattened top a ring of minute vesicles or of still finer papules.

The individual lesions are at first discrete, but they tend to form irregularly arranged groups, which may assume a circular shape or that of a figure with sharp angles. In no other eruption than lichen planus do eruptive elements form in distinctly straight lines and in variants from the latter, such as, *e. g.*, a figure representing a digit flexed at a right angle. In this way are occasionally formed exceedingly odd-looking groups—parallel lines, cockades with scaling crests, rings, rosettes, etc.

As the lesions grow older they almost invariably distinctly deepen in shade, from a light-crimson to a dull-purplish hue, and still later to even a darker color. In typical cases the lesions of lichen planus when actually subsiding or well-nigh gone from the surface of either the chest or of the belly are likely to leave a smoky and even blackish hue, which is the result of the pigmentation produced when the disease is in greatest activity. These sequels of the disease are naturally most conspicuous on the lower extremities.

The eruption is usually symmetrical, though it may occur in patches on only one side of the body. The most frequent site of the disease is the anterior surface of the forearm, but lesions may develop upon any portion of the body-surface, especially the abdomen (more frequently

its lower third), the extremities (in the point of frequency, first the upper and then the lower extremity), the hands, the penis, the back, the ankles, the inner side of the knee, and the neck. A typical display of symptoms is not often to be seen on the face. In rare cases¹ the eruption is universal.

When the papules coalesce and also, as happens in extreme cases, when they have flattened so as to be indistinguishable before the disease has yielded, a crimson-hued sheet or mask of the skin is seen, generally characterized not merely by the color of the lichen-papules, but also by a silvery sheen, due to thin shining scales which do not completely cover, but which supplement, as it were, the empurpled patches, beside and over which they form. These scales are not freely shed from the surface, but they are firmly attached.

The greatest variation is experienced in the way of subjective sensations. In some patients the eruption is tolerated with but few symptoms of annoyance. In other patients the greatest possible distress is occasioned, and no subjects of scabies or of eczema suffer more. The eruption of lichen planus, however, is less often scratched than that of other cutaneous exanthemata accompanied by severe pruritus.

The disease is usually chronic in course. Patients of the better class commonly reach the end of their sufferings in the course of six months or a year. This fact seems to furnish a reasonable basis for the belief that treatment has a favorable influence upon the malady, seeing that it is not rare to discover untreated patients or those in whom the nature of the disease has been long ignored, who for two and even more years have suffered from lichen planus in circumscribed forms limited to a palm-sized patch over one popliteal space or a wrist; while another for six years and more may have been affected over an entire lower extremity or a shoulder. The disease may recur, but recurrence is an exception to the rule. In the rarer acute forms noted by observers the disease may be relighted to activity from a chronic patch; or it may begin with acute symptoms.

Lichen planus is remarkable for the exceptions it offers in individual cases to the lesions seen in others. Thus, Crocker² describes papules with a convex instead of a concave top; and cases in which the lesions were soft and compressible instead of possessing the firmness of the usual lichen planus nodule. The lesions are occasionally interspersed with telangiectases, bullæ, etc.

When the mucous surface is affected the disease develops in whitish macules, or striæ, or flat papules, the latter aggregated on both sides of the tongue, the striæ running along the line of the jaws where the molar teeth come in contact. The affection in this region has unquestionably often been confounded with leukoplasia (so-called "ichthyosis linguæ"), elsewhere described. In the mouth the papules of lichen planus are in rare instances conical at the apex.

The disease most often attacks young adults and the middle-aged of both sexes. In children, who suffer but rarely, the eruptive features show a striking tendency to early flattening, and they thus simulate the

¹ Fordyce, Jour. Cutan. and Gen.-Urin. Dis., 1898, p. 444.

² Diseases of the Skin, second edition, 1893, p. 300.

macules of much simpler disorders of the skin. Lichen planus of the face occurs much oftener in children than in adults. A few cases of the disease have been recorded in infants, and these commonly among the dispensary class.

Upon the lower extremities a narrow fillet of typical lesions may in cases extend from the heel to the trunk along the line of the sciatic or other nerve. After the disease has existed for a long time, a single band-like plaque of the disease may lose almost all papular features, and come to resemble a deep-purplish keloid-like elevation or flat tumor imbedded in the skin. When involution is complete there are usually very deep pigmentation and at times slight atrophy.

Whitish points and streaks are visible at times in the smaller and larger lesions, the horny scales projecting from other lesions like thorns. Fantastic groups occur on the body in the form of a cockade or in a whip-shaped curve; the bands of papules may also assume odd and singular figures. At times, especially when the case is one of persistent and wholly discrete papules, linear bands of these lesions, one or several centimetres in length, of geometrical straightness, may be commingled with curved lines and even goitre-shaped figures.

When there are decided sheets of infiltration they are most conspicuous over the flanks and belly, but they may also be seen elsewhere, as, for example, over the extremities. In these cases the very peculiar color of the patch with indefinite outlines is characteristic, and is often in brilliant contrast with the scales. The scales are of a silvery whiteness, very different in hue from the pearl-white or yellowish-white large scales of psoriasis, and equally distinct from the branny and yellowish fine scales of pityriasis rosea. They are by no means freely shed from extensive patches, but they adhere and rarely cover the entire patch, nor crop out beyond its indefinite border, but produce a species of silvery sheen over its central portions. These patches are usually symmetrical, as are commonly also the discrete papules of extensive development. When either of these forms proceeds to involution the scaling ceases, the infiltration subsides, and the intensely deep pigmentation left is characteristic of the disease, being often of a smoky, and even of a blackish hue.

The course of the disease is always toward recovery; while it may endure for months, it rarely lasts for years.

Variations in the small or the large papules are occasionally observed. Minute vesicular points may be visible over their flattened surfaces, or there may be seen equally minute keloid-like processes, or reddish points, upon or between them, where the vascularity of the tissues beneath is apparent. Only as an exception to the rule are the polygonal papules clustered about the orifices of hair-follicles, as in pityriasis rubra pilaris and lichen ruber. At times whitish points and streaks are left after the resulting pigmentation subsides.

Bullæ have been recognized as coincident features in but a few cases. Over the palms and soles the whitish spots, produced by exfoliation of the epidermis, may be the most conspicuous symptoms of the disease in those regions.

Lavergne divides all cases of lichen planus into three classes. The

first is chronic lichen planus, the disease as it is known in its most common form; the second is acute lichen planus, in which the papules rapidly develop and form extensive patches, thickened, painful, livid red, and abundantly desquamating; the third form is the lichen planus corneus of Vidal, Fournier, and Besnier. This form corresponds with the coin- or palm-sized, bluish to blackish, scaling and rugous, tumor-like plaques, usually seen on the anterior face of the leg, briefly described above.

HYPERTROPHIC LICHEN PLANUS¹ is characterized by the occurrence of numerous, flat-topped, purplish and brownish-red elevations, commingled with sepia-brown pigment-spots. The warty growths may be elevated four or five millimetres above the general level of the skin. They are seen usually on the legs. The penis is at times surrounded by papillomata, some of which coalesce to a diffuse infiltration; and the genitalia of women, including the pubic region and hypogastrium, may be studded with pea- to bean-sized empurpled nodules seated on a dull-crimson infiltrated integument.

Etiology.—The causes of lichen planus are obscure. It is often difficult to recognize the sources of the disease, but in many cases a history of nervous exhaustion can be obtained. Affliction, long-continued anxiety, and overwork, especially in cases in which mental effort is required for its continuance, are frequent causes of this disorder. Many patients are notably well nourished and not lacking in flesh. In fact, the combination of a fair degree of nutrition of the body with nervous exhaustion is to be recognized more commonly in patients affected with lichen planus than in any other affection as annoying and persistent.

Other causes cited are: traumatism (dog-bite—Walters), digestive disturbances, malaria, malnutrition, and diseases of the generative organs. Different opinions are entertained respecting the frequency with which the two sexes are attacked. General experience points to the conclusions formulated by Crocker, who reports more cases among (English) women than among men, as against the statistics of the Vienna school, which reverse the figures. The disease among the nervously taxed of the well-to-do classes is encountered more frequently in private practice than among out-patients of public charities, who suffer to a greater extent than others from cachexia and malnutrition. Russell lately reported a case in which the disease followed amputation of four fingers of the right hand.

Pathology.—Robinson first clearly showed the pathological distinction between lichen ruber and lichen planus. His observations have been confirmed by those of Boeck, Kaposi, Touton, Weyl, and others.

The first changes noted in the skin are increase in the lumen and a sinuous condition of the capillaries supplying the one or two papillæ concerned in a single papule. The papillæ, thus largely filled with dilated capillaries, contain also a network of fine connective-tissue

¹ Cf. Fordyce and Eddoues, Jour. Cutan. and Gen.-Urin. Dis., Feb., 1897; Brit. Jour. of Derm., 1898, p. 103.

fibres, and dense, round cells, which proceed to multiply. Later, more papillæ and also the epidermis are concerned in this process. In the places in which white points are exhibited granules of keratohyalin become visible. In some portions of a lichen-papule of medium development the stratum corneum exhibits an external, dark, narrow, and firm layer, and beneath it are two to four rows of translucent cells forming the stratum lucidum; but in other parts, and in all parts when fully developed, the stratum corneum breaks up into definite lamellæ, a phenomenon seen in other disorders attended by derangement of the keratogenetic function of the skin. The external layer is dark and firm when stained; next below it is a wider layer of swollen cells with nuclei scarcely visible, or with relics of liberated nuclei; and, still deeper, a narrow and solid layer beneath which the stratum lucidum becomes visible.

The horny layer is almost entirely absent over the region occupied by the cell-packed papule, below which the corium is normal. The rete is centrally hypertrophied, especially in the region of the sweat-ducts; its cells above the affected papillæ are horizontally flattened, and the granular layer is thickened. In some places it is difficult in consequence of these changes to distinguish between the rete and the corium beneath. The cell-infiltration, composed largely of embryonic white blood-corpuscles, extends more deeply into the corium in the neighborhood of the sweat-ducts.

Briefly, it appears that the papule of lichen planus is the result of a primary hyperæmia of the papillæ of the corium; a secondary thickening of the lower part of the rete; a tertiary flattening of the papule by reason of the resulting pressure, producing thus the appearance of umbilication; a proliferation of cells in the granular layer, as a result of which the deposit of keratohyalin in whitish points or in sheets occurs sufficient to produce the clinical peculiarities having that appearance (not due, as Neumann supposed, to changes in the sweat-glands); and coloration of lesions due to both vascularization and to escape of blood-corpuscles.

Diagnosis.—The diagnosis rests upon the characteristic shape, size, color, grouping, disposition, and umbilication of the papule of lichen planus, which are features not found in any other papular disease. Thus, in its size, apex, color, and course the papule of papular eczema is quite different from that described above, being brighter, redder, more acuminate at the apex, and much more often followed or accompanied by catarrhal symptoms. In psoriasis punctata the scales are abundant and readily removed; the individual lesions are increased rapidly by peripheral extension, far beyond the fullest development of the papule of lichen. The papular syphiloderm is not, as a rule, pruritic, not flattened when minute, not polygonal in shape, and not covered with a closely adherent horny scale, and it always occurs in patients in whom careful investigation discloses other symptoms of the disease (mucous patches, adenopathy, etc.).

The distinctions noted above in connection with lichenification of patches of chronic inflammation of the skin are not to be disregarded.

Treatment.—Roborant treatment by quinine, the mineral acids,

the ferruginous tonics, and cod-liver oil is frequently indicated. Although it is claimed that arsenic actually aggravates the disease, there is general agreement with Hebra, Wilson, Duhring, and others in ascribing to it the most brilliant results obtained in the treatment of lichen planus, results far more consistent than are obtained from the same drug in the management of psoriasis. Boeck and Taylor give 15 grains (1.) of potassium chlorate in 4 ounces (120.) of water, fifteen minutes after eating, followed in a quarter of an hour by 20 drops of dilute nitric acid, swallowed in a wineglassful of water. Robinson, in generalized hyperæmic cases, praises the alkaline diuretics (potassium acetate with sweet spirits of nitre), well diluted after meals. Fox regards mercury as valuable in the chronic forms of the disease, for which also he administers *asafoetida*. Koebner has injected both pilocarpine and arsenic subcutaneously with success.

In the way of local treatment the most important measure in acute cases is complete protection of the involved surface with powders, ointments, pastes, soft dressings, or with a non-irritating protective plaster, such as zinc oxide plaster or plaster-mull. Unna used 1 part of corrosive sublimate, 20 parts of carbolic acid, and 500 of benzoated zinc oxide salve; Brocq and Jacquet employ the tepid douche for from two to ten minutes once and oftener in the day; Vidal employs baths of vinegar, 1 litre to the bath; and the external application of 1 part of tartaric acid to 20 of the glycerole of starch; Wilson praises a mercurial salve, 2 grains (0.13) to the ounce (30.). In all severe cases attended with considerable pruritus frequent baths of warm oatmeal- or bran-water should be ordered, after which the skin should be dried and a Lassar paste applied. When later a stronger application is tolerated the paste may be medicated with pyrogallol, ichthyol, or the dried ferrous sulphate. Tar, thymol, iodine, or chrysarobin may also be employed topically with success. Weyl recommends caustic applications, as also 1 or 2 parts of beta-naphthol to 90 of rectified spirits of wine and 10 of glycerin. In the persistent verrucous types of the disease from 10 grains to 2 drachms (0.66–8.) of salicylic acid to the ounce (30.) of paste or plaster may be employed.

Prognosis.—The prognosis is in general favorable, since even cases of long standing are usually relieved when the subjects of the disease are placed under conditions favorable for recovery. It is always to be borne in mind, however, that in individual cases in which the patient is neurasthenic the eruptive symptoms may persist for years, accompanied by intense itching and a consequent teasing of the nervous centres. In this class of subjects it is generally well to make a guarded prognosis, and to pronounce upon the future with just reserve.

LICHEN ANNULARIS (RINGED ERUPTION OF THE EXTREMITIES) is a title given by Galloway¹ to a case in which several lesions having pale, irregular, elevated borders showing circular or circinate outlines, developed about the joints of the hands. The border was slightly elevated, about three millimetres in breadth, smooth, and not reddened. The skin of the enclosed area was almost sound, but showed slight

¹ Brit. Jour. of Derm., 1899, p. 221.

signs of atrophy when the original process had undergone involution. The histological structure closely resembled that of lichen planus. The lesions flattened rapidly under the application of salicylic acid in ointment. A similar case is under our observation.

LICHENIFICATION.—In certain portions of the integument, usually definitely circumscribed and of a limited area, a significant change often occurs, which has been designated by the French *lichenification*, on the ground that this is not a form of lichen planus, the term which they employ designating the change which is progressing in the skin. It is possible that this condition represents a stage intermediate between chronic inflammation and a specialized dermatosis. In any event it is necessary to distinguish between the two in establishing a careful diagnosis. In such patches (marginate eczema, *névrodermite*, etc.), found particularly about the flexures of the joints, the fork of the thighs, the back of the neck, and elsewhere, the surface of the skin is seen to be studded with dull-reddish, closely packed, flat-topped, often polygonal papules, which strongly resemble those occurring in lichen planus, and yet which seem to be symptoms of the chronic inflammation present rather than of an affection of distinct type.

ECZEMA.

(Gr., ἐκ ξέω, to boil forth.)

(Ger., ECZEM; Fr., ECZÉMA.)

Eczema is distinctly a protean disease. It cannot, therefore, be defined or described satisfactorily in a single paragraph. It is not only protean in its clinical manifestations, but its causes are varied, numerous, and usually complex. In histological detail different types of eczema vary considerably, yet all probably result from one common pathological process. Clinically, though a dozen successive cases of eczema may present wholly different pictures, yet they all have some characteristics in common and the diagnosis in most cases is not difficult. It has often been described as a catarrhal inflammation of the skin, but many cases of dermatitis now generally classed as eczema show no vesiculation or other evidence of discharge, and cannot properly be considered catarrhal in nature. As a rule, eczema shows at some time in its history more or less serous discharge, either in the form of vesicles or in a denuded oozing surface; but some cases of erythematous and papular eczema persist as such throughout their entire course, and never produce an exudate upon the surface.

A vexed and unsettled question among dermatologists is the relation of eczema to other forms of *dermatitis*. The study of the exact pathological changes in the skin has led to the inclusion under eczema of conditions formerly considered distinct affections. On the other hand, many writers, especially in England and France, are now endeavoring to exclude from eczema every dermatitis for which a definite cause can be found. Eczema is a dermatitis, and it is not possible to say for every case which title is the more appropriate. A convenient,

arbitrary division, which is followed in these pages, classes under dermatitis those forms of inflammation of the skin which result from recognized, external causes, and which subside on the removal of the cause. Such definite and independent affections as dermatitis herpetiformis or dermatitis repens are, of course, considered separately.

Symptoms.—Eczema is one of the diseases of the skin of most frequent occurrence. In the statistics gathered by medical men it would seem to rank first in the order of frequency, forming from 20 to 40 per cent. of dermatological cases reported. It is undoubtedly true that acne is a more common affection than eczema, but as many subjects of acne never deem it necessary to submit to treatment for its relief the records of such cases do not figure in dermatological statistics. This fact being noted, eczema may be regarded as the disease of the skin for which most frequently the practitioner of medicine is consulted. By as much as inflammation is the commonest accident of other organs of the body, by so much is its enveloping organ subject to the same pathological process.

The accepted signs of inflammation of any given tissue are usually named as increased heat, redness, pain, and swelling. These symptoms are present to some extent in every eczema though modified by the anatomical peculiarities of the organ in this case affected. The surface involved in typical eczema always shows some elevation of temperature, it being slight in chronic, but more marked in acute, cases. Redness, varying in shade from the bright red of the acute to the dull red of the chronic forms, is also true of the eczematous skin. Pain here is represented by a sensation of itching which is almost invariably present and may vary from a slight annoyance to an almost intolerable distress. It is commonly intermittent or paroxysmal in character and is usually worse at night. In some instances, especially in acute and erythematous types, the sensation of burning or smarting may be more marked than that of itching. Occasionally an eczematous skin is hyperæsthetic and exceedingly sensitive to contact with even the blandest substances. The degree and character of the subjective sensations in eczema depend largely upon the location, type, or severity of the disease, but also to some extent upon the general condition or peculiarities of the individual. The fact that itching rather than pain accompanies inflammatory disorders of the skin is due largely to the fact that the skin is exposed to the air, and its increase in bulk is not opposed by contiguous parts. Inflammation of the inner skin of the body, that of the lining membrane of the stomach or of the intestines, is generally characterized by the occurrence of severe pain. In acute types of eczema there is often some œdematous swelling, together with slight infiltration of the skin. In chronic forms the infiltration and thickening of the skin are more pronounced and may be excessive.

In addition to the symptoms of heat, redness, itching, or burning, and swelling or thickening of the skin, found in every case of eczema, the great majority of eczemas have certain characteristics in common. The course of the disease is capricious, not only the severity of the process, but often the type of lesion changing frequently and rapidly.

This is most conspicuous in children and in others having delicate skins, and in those cases in which the affected areas are not protected from atmospheric and other external influences; it is unusual for any eczema to pursue an even course. Daily variations in severity, with or without change or modification of type, are not uncommon. Apparent recovery is frequently followed by a relapse which may develop fully in a few hours and without apparent cause.

Aside from some cases of erythematous and papular eczema, which may persist throughout without change of type, eczema is notably a polymorphic disease, presenting in irregular succession or in varied combinations: erythema, papules, vesicles, pustules, crusts, scales, fissures, excoriations, or denuded and oozing surfaces. Even in the mildest cases the skin is slightly infiltrated, while in some severe, chronic forms the thickening may be excessive and deforming, or there may be hypertrophy of all the layers of the skin producing wart-like growths (*ECZEMA VERRUCOSUM*).

The serous discharge which is present during at least a part of the course of most eczemas is characteristic, and stiffens articles of clothing on which it dries. It may be imprisoned in vesicles, but more commonly oozes from a denuded surface or from minute excoriated points which represent abortive or ruptured vesicles.

Like all other inflammations, eczema may be acute or be chronic. Like all others, too, the acute may precede, and the chronic may follow, or the reverse may occur. The disorder, originating in subacute or insidious forms, may become chronic, and then, as the result of fresh or of more severe irritation, may develop the acutest symptoms. Frequently, as in the eczema of children, the disease may be chronic in respect to duration, yet most of the time present acute symptoms. As a rule, eczema does not undergo spontaneous recovery, but tends rather to remain indefinitely and to extend either by involving contiguous surfaces or by developing in new areas. The disease is commonly more or less local, appearing in one or several irregular and usually ill-defined areas, but may be general or even universal. It apparently occurs independently of all other disorders, the general health remaining unaffected even in severe forms of the disease; or it may be but the external expression of constitutional disturbance.

Clinically, several types of eczema can be recognized. These types require separate description. It should not be forgotten, however, that in the majority of cases eczema is a complex process, in which two or more types are seen, either in succession or simultaneously. Though several forms of eczema frequently coexist, it is usual for one type to predominate, either throughout the course of the disease or for certain periods.

[A] *Eczema Erythematosum*.—This form of the disease is most common on the face, especially in individuals exposed to wind and weather or to direct heat, but it may appear on any part of the body, and is frequently seen on the palms, the soles, and in the genital regions. It begins usually as a diffuse, ill-defined area of redness, less frequently as a number of coin-sized macules or erythematous spots, which may coalesce or remain more or less distinct. Swelling and infiltration are

present in varying degrees. In acute cases the œdema may be excessive, sometimes closing the eyes. In the subacute forms, which are the more common, there are less œdema and more infiltration and thickening of the skin.

The sensation of itching, which is so characteristic of most forms of eczema, is usually excessive, though it may be largely or wholly supplanted by one of heat or of burning. This is especially true when the process is acute in character. The color varies from a bright to a dull or purplish red, depending upon the severity of the disease, its location, and the peculiarities of the individual; and inasmuch as the condition is more frequently observed in middle-aged adults with darker hue of integument than in early life, the color of the part is often noticed to be of a dull-crimson shade. At times the coloration is irregularly distributed, producing a mottled appearance, bright at one point and dark at another. A yellowish tinge usually indicates that the process is combined with seborrhœa, producing the combination described in another chapter as eczema seborrhœicum.

The erythematous surface is modified, as a rule, by more or less fine desquamation, which begins a few days after the occurrence of the first erythema, and persists to the end of the disease. There is no discharge, unless, as frequently happens, the type changes to a moist form, but when the disease occurs on apposed surfaces, as in the axilla, under the breasts, or about the genitals, the epidermis may be destroyed by maceration and friction, and leave a denuded, oozing surface. The disease may pursue an acute course, terminating in exfoliation and gradual resolution, or changing to the papular, vesicular, pustular, or mixed types. More frequently it persists and becomes chronic, both in the intensity of the process and in its duration. The skin then becomes more infiltrated and thickened, and may present voluminous firm folds, which are very conspicuous and often deforming. Exfoliation may be so prominent a symptom as to suggest for the condition the name of ECZEMA SQUAMOSUM or EXFOLIATIVUM. The area involved is frequently better defined than in other forms of eczema, and though the condition may remain limited to its original site for months or years, it has a decided tendency to extend either contiguously or by the formation of new areas. The intensity of the process may change frequently and rapidly. It is usually aggravated by exposure to heat, cold, or wind, or by any condition which favors congestion of the part. Scratching of the surface involved produces a change in the symptoms which the skilled eye will promptly recognize. Minute superficial losses of tissue are then visible here and there upon the surface; the more recent lesions having a reddened floor possibly hidden beneath a thin blood-scale, the older being surmounted by a light yellowish-red crust. The scratch-lines, often recognized elsewhere, are here less evident.

Like all other varieties of eczema, this form is extremely liable to recrudescence and relapse. In advanced life traces of the disease may be visible for years.

[B] *Eczema Papulosum*.—Under this title are classed all those forms which have been described as LICHEN SIMPLEX, LICHEN ECZE-

MATODES, ECZEMA LICHENOIDES, etc. It is of great importance that there should be a distinct and general recognition of the fact that in exceptional cases eczema may exist from first to last as a dry infiltration of the integument, for there is perhaps no one of the various manifestations of the disease that is so frequently confounded with other widely different affections.

The papules are acuminate, pinhead-sized or larger, colored in various shades of red to a dark lurid shade, and are usually seated upon a reddened and thickened base. They are generally discrete, though often set closely together, are accompanied by an intense form of itching; and of all eczematous lesions are most likely to be irritated by scratching. Their summits are torn, often to such an extent as to bleed, the blood drying in minute crusts on the apices of individual lesions. Existing papules may persist for weeks or may disappear and be replaced by others. They may completely coalesce to form irregular, thickened, elevated, pea-sized or larger patches, covered with scales. The areas involved in papular eczema are often fairly well defined in outline. The extent of surface affected varies, the disease being in some cases largely diffused over various portions of the body, but usually limited to small single patches no larger than the size of a small coin. Such patches, covered with a single or with several groups of reddish papules, may continue to torment the patient for long periods of time, or, being at one time relieved, may recur with each aggravation of the malady by the exciting cause. Papular eczema is a dry manifestation of the disease, and is thus most frequently noticed upon the drier portions of the integument. These parts are the surfaces of the limbs, the back of the body, and, in particular, the scrotum. In the latter region the papules are large and often flattened. If the moist forms of eczema are most frequently seen in early life, it is none the less true that the dry forms are the most common in adult life or in advanced years.

It should not be forgotten, however, that the papules here described, when there is free exudation beneath the surface, may exhibit pin-point-sized vesicular summits which may develop into minute or larger pustules. A patch of papular eczema, where no vesiculation nor pustulation has been observed, will, if sufficiently scratched, ooze with moisture, the serum escaping from the abraded surface. There are, in fact, few scratched eczematous surfaces which will not moisten a dry handkerchief applied to the part. This weeping condition attracts the attention of patients themselves, who complain of it in describing their symptoms. A species of relief from the pruritus is thus obtained; and in aggravated cases patients will scratch or rub or otherwise irritate the diseased patches, not merely for the purpose of gratifying the intense desire to assuage the itching, but also to induce serous exudation for the sake of the relief it affords. The secretion when in contact with linen cloths stains and stiffens them, very much as seminal fluid leaves its traces upon clothing.

Resolution of papular eczema is accomplished after the formation of scales, the tissues beneath the latter assuming more and more the appearance of healthy skin.

[C] **Eczema Vesiculosum.**—This expression of the disease is characterized at an early period by the formation of minute vesicles. It is a matter of importance, however, to recognize the fact that the vesicular, like the erythematous, is but one of several manifestations of this singularly protean affection. Long after the appearance of the treatises of early English dermatologists the term “eczema” was very generally limited by physicians to the vesicular phases of the disease; it is to the Vienna school that we are largely indebted for the recognition of the fact that these simultaneous or successive features, presented often in the same individual, really belong to one and the same malady. To limit the name eczema to-day to its vesicular variety alone would be to relegate the student of diseases of the skin to the misty uncertainties of the first half-century of dermatology.

The clinical features of vesicular eczema are chiefly due to the acuity of the inflammatory process present, and to the consequent free exudation of serum of the blood from the vesicular plexus immediately below the pars papillaris of the corium. The involved surface usually feels at the outset hot, itchy, or unusually sensitive, and soon after becomes more or less intensely reddened, the result of hyperæmia and subsequent exudation which may last for one or for several hours. Poppy-seed- to grape-seed-sized vesicles then become visible on this reddened base. The lesions may be closely packed together, or be discrete, or may be so abundant as to coalesce, a frequent behavior of all vesicular lesions. Each vesicle is filled with a droplet of clear serum imprisoned beneath the most superficial layers of the epidermis. This vesicle is readily ruptured, and if this rupture does not speedily occur as the result of accident, the lesion bursts spontaneously, and its limpid contents are then poured out upon the surface of the integument. The quantity of the fluid thus exuded is in excess of that originally contained in the small vesicular chamber. This excess is due to the fact that the elevated, macerated, and broken epidermis no longer presents an obstacle to the outflow of serum from the engorged vessels beneath. Minute and even large drops of a clear fluid of syrupy consistency can be seen collecting at the points where the solution of continuity has occurred. If with a slip of bibulous paper the first drop be removed, its place is visibly filled by a second. Crops of new vesicles succeed the first, each crop being followed by the train of symptoms described. The vesicles are usually short lived and often have disappeared before the patient is seen by the physician. In other instances the destruction of the epidermis by rubbing or scratching, or by an abundant and rapidly formed exudate, allows the escape of the fluid without previous vesicle-formation. The discharge dries rapidly, when exposed to the air, in light-yellowish crusts which are rarely bulky. Clothing on which the fluid dries is stained and stiffened. The weeping at many points of the surface affected is so prominent a feature of the disease that it has led several authors to describe eczema as invariably a catarrhal disease of the skin. There are, without question, forms of this disease in which the history is throughout entirely different from that just described, in which no evidence of discharge can be appreciated from first to last, and yet in which, by

artificial measures, the so-called "catarrhal" features can readily be produced.

The contour of the affected patch or patches is seldom well defined, the pathological portions imperceptibly shading into the sound skin. The color of the area thus diseased varies according to the stage of the process, being at one time of a vivid red, at another yellowish, and, when covered with crusts or scales, undergoing a corresponding change of hue. Infiltration of the skin occurs rapidly, so that when a portion of the affected integument is pinched up between the finger and thumb it is found to be thicker and less elastic than normal. This form of eczema may persist or recur in a single small area, or it may spread and become diffused or even generalized. It appears commonly on the flexor and other surfaces where the skin is thin.

The subjective symptoms of vesicular forms of eczema are more or less intense itching and often burning. In very acute forms there is considerable soreness, the patient managing the affected part with as much care as if it were a fractured limb. In exceptional cases, more frequently observed in children, there is a sympathetic febrile disturbance of a mild grade.

As resolution approaches, all the symptoms described above gradually decline in severity; the serous discharge diminishes, the redness fades, the limits of the involved area become less distinct, the crusts loosen and fall, and beneath the scales which have taken the place of the oozing and broken epidermis a new and tender epithelial covering is produced. As a rule, for weeks after the process has completely ceased the newly formed epidermis has a slightly reddened and tender appearance, though complete resolution is followed by no permanent sequels. Instead of undergoing resolution the condition may terminate in eczema rubrum, in eczema squamosum, or in eczema pustulosum, this last form being ordinarily due to pus-infection.

These then being the typical phases of vesicular eczema, clinically the picture may be quite different from that described. The types here given are convenient for analysis and study, however much they may be commingled and obscured in the inflamed integument. Like the erythematous, the vesicular forms of eczema may precede the others, and, becoming chronic, may torment the suffering patient continuously for long periods of time, or may yield, only to reappear at irregular intervals.

[D] **Eczema Pustulosum** (ECZEMA IMPETIGINOIDES, IMPETIGO ECZEMATODES).—This type may originate in one of the other forms of eczema, in consequence of the severity or acuity of the process, or be the result of secondary pus-infection, or pustular lesions may rapidly form at the onset. Usually there is first seen a crop of minute vesicles, which enlarge and become distended with puriform contents. These pustules either accidentally or spontaneously burst, and the fluid with which they were distended dries into yellowish-green or darker colored friable crusts. In aggravated cases the purulent matter seems to form directly upon the involved surface. If the process be long continued, infiltration occurs, and the itching, which in all varieties of the disorder is a characteristic feature, is awakened as an accompanym-

ing symptom. The itching, however, is rarely of the peculiarly aggravated type accompanying the erythematous and papular phases. Pustular eczema is most frequently encountered on the head, and in constitutions that do not readily resist the invasion of pus-cocci. When existing on the scalp and the face there is most commonly an involvement also of the sebaceous glands, the secretion of which, altered by the periglandular inflammation, is added to that naturally produced by the exudative process. Singular shades of mixed yellow and green and even black, are then to be distinguished in the resulting crusts, which later desiccate and fall, leaving a reddened and tender new epidermis beneath. The condition is frequently seen on the scalp and face of infants, and is then popularly called "milk-crust."

The four types of eczema considered above are, as has been stated, sometimes encountered in practice as distinct and unmingled forms of cutaneous disease, some of them more commonly than others. To present, however, a picture of eczema as it is seen clinically it must be understood that these several forms, useful in the analytical study of the disease, often become, in actual observation, well-nigh inextricably commingled. "Observation of the natural course of an attack of eczema," said Hebra, "furnishes the most unassailable proof of the connection between its various forms. In one case an eruption of vesicles begins the series of symptoms; in another it is preceded by the appearance of red scaly patches or groups of papules; or vesicles and papules are developed together, some of the former rapidly changing to pustules and forming yellow gum-like crusts by the drying up of their contents." It is this constant interchange of features that distinguishes most eczemas from all other inflammatory affections of the skin.

The name ECZEMA RUBRUM has been given to the red and angry form of the disease, which, because of the free exudation of serum from the surface, has also been termed ECZEMA MADIDANS. In this form the highly inflamed, intensely red and wounded integument, the horny layer of which has been destroyed and removed, pours out freely upon the surface a thick, gummy or syrupy fluid, which, if artificially removed, leaves behind it a swollen, angry, and still discharging skin; or, being permitted to dry where it has formed, covers the surface with large flake-like crusts, which may be thin and yellow, or thick, dark-colored, and often blood-stained. The crusts may remain but a few hours before an excessive outpouring of the fluid removes them. There are thus displayed in frequent and rapid alternation the discharging and the crusted surface. Eczema rubrum may occur on any part of the body, but especially in the flexures of joints or where two surfaces come together; another common site is on the legs of elderly people or of those who stand much of the time. In this region it is exceedingly chronic and rebellious to treatment, and eventually is accompanied by a great degree of infiltration and thickening which may go on to hyperplasia and produce a condition simulating elephantiasis.

ECZEMA SQUAMOSUM, or **EXFOLIATIVUM**, is a type of the disease marked by more or less redness, infiltration, and exfoliation of the skin. The scales are usually small, thin, whitish, and adherent. They may be scanty or quite abundant. Squamous eczema represents a low grade of inflammation, and is present as a transitory condition during a part of the period of resolution of all other types of the affection. It frequently persists, however, in the form of irregular, usually ill-defined, more or less infiltrated, dry, scaly patches. It is seen commonly on the neck and face, at the border of the scalp, and on the limbs.

ECZEMA FISSUM, **ECZEMA RHAGADIFORME**.—In eczema of the hand the movements of the fingers often produce fissures or cracks in the inflamed and infiltrated integument, and to those fissured forms the titles named above have been given. Fissures are observed wherever an eczematous disorder has so impaired the elasticity and extensibility of the skin that its necessary movements, especially about the joints, tear and stretch the thickened integument. It is thus seen not only on the hands, but also on the arms, the feet, and about the ankles, the resulting rhagades being, at times, the most painful of all the complications of the malady. It is frequently seen about the mouth and anus. Occurring upon the bodies and the hands of those who are compelled to come in contact with irritating substances, this form of the disease finds its severest expression. Mild, commingled forms of squamous and fissured eczema occur quite commonly on the hands and faces of persons whose skin is thin, tender, and poorly nourished, or exposed to wind, harsh soaps, hard water, chemicals, and other irritants. The condition is popularly known as **CHAPS** or **CHAPPING**.

ECZÉMA CRAQUELÉ is a rare form of eczema described by French writers in which a reddened surface is covered with large, thin flakes, or scales, separated and outlined in polygonal areas by superficial cracks or fissures. The condition usually involves a considerable surface of the skin, and is accompanied by itching and burning and in most cases by hyperæsthesia and an extreme sensitiveness to temperature-changes. It occurs chiefly in neurotic subjects.

ECZEMA INTERTRIGO is a name applied to that form of intertrigo which, surpassing the limits of hyperæmia, results in an exudative process. Reference is made to this possibility in describing the symptoms of erythema intertrigo. In eczema intertrigo the symptoms are usually those of diffused redness of surfaces of the skin in close apposition, macerated by previous transudation of sweat, and weeping with the serum which oozes from several abraded points or patches. It chiefly attacks the obese of both sexes and all ages, and in advanced years the gouty.

The flexor surface of the extremities, especially in the vicinity of the joints, as well as the inframammary regions, the interdigital surfaces of the feet, and the axillary and inguinal spaces, are particularly prone to exhibit symptoms of this disease. In all such localities the alternate tension and relaxation of the integument serve, when the limbs are in motion, to increase the pruritus, and, correspondingly, to aggravate the disease. Often a certain proportion of symmetry can be perceived,

the two popliteal spaces, for example, being simultaneously affected, though each in a different degree. The parts most favorable for the complications of intertrigo are those nearest the trunk, where moisture and heat are greater, as the groins and the axillæ, while the elbow and popliteal spaces are more frequently dry, exhibiting papulo-squamous ridges in lines at right angles to the axes of the limbs, with hyperæmic patches on either side.

ECZEMA VERRUCOSUM, or the wart-like form of the malady, is occasionally observed, especially upon the lower extremities, in middle life or in advanced years, as the result of long-continued disease. The integument becomes thickened and so hypertrophied as to suggest the appearance of warts closely packed together in a circumscribed patch.

ECZEMA SCLEROSUM is a form of the disease most frequently observed upon the palmar and plantar surfaces, a condition referred to in the paragraphs relating to Asteatosis. In eczema sclerosum is presented a densely thickened inelastic integument, suggesting the condition of tanned leather, without the occurrence of any of the other lesions of eczema described above. As a consequence, the power of perfect extension of the digits is impaired.

TUBERCULOUS ECZEMA OF NURSINGS, so called, is a term which has been applied to eczematoid eruptions about the mucous orifices of the eyes, nose, mouth, and ears, occasioned and sustained by morbid conditions of, and serous discharges from, those parts (otorrhœa, rhinitis, phlyctenular keratitis, etc.), and accompanied by œdema, vesiculation, and enlargement of lymphatic glands. The disease is characterized by rebelliousness to treatment and chronicity of course. This disorder is improperly named, since tubercle-bacilli have not been recognized in its lesions; and because the symptoms above enumerated may all be present when there is simply systemic nutritive failure and when no tuberculosis of other organs is present.

ECZEMA DIABETICORUM (Fr., DIABÉTIDES).—A singularly well-defined eczema is to be recognized about the genital organs of both sexes, but more particularly of women, accompanied by the most atrocious pruritus, excoriations produced by scratching, and enormous tumefaction of the anogenital and surrounding integument. The local symptoms are chiefly those of eczema erythematosum, the surface being, as a rule, destitute of either vesicles or pustules. There are often a profuse serous discharge, considerable infiltration, and the production of inflammatory nodules over the engorged surface.

These cases fall within three categories. In the first and rarest the patient has saccharine diabetes of long standing, and the parts are simply irritated by the passage over them of urine charged with sugar. In the second and commoner form there is a temporary glycosuria, either produced by the local eczema or indirectly resulting from the latter, and yet due to transitory causes, since both the eczema and saccharine urine disappear with relative rapidity when the local treatment is combined with the dietary appropriate for the diabetic. In a last group the sugar-fungus (*Torula cerevisiæ*) finds a nidus in the skin.

ECZEMA FOLLICULORUM.—Morris first described under this title a form of eczema which begins as an inflammation of hair-follicles.

Each inflamed follicle projects from the surface in the form of a red-den papule about which the skin becomes hyperæmic. As the process spreads centrifugally by the involvement of adjacent follicles, the centre undergoes involution with desquamation, and a gradual change in color from red to yellow. This condition is found most frequently on the extensor surfaces of the legs and the arms, in multiple, scattered patches. The itching may be intense. This form of eczema is obstinate, and usually recurs. Morris considers it parasitic in origin and allied to sycosis.

ECZEMA PARASITICUM.—Under this title is included a large number of cases the exact relations of which to the recognized types of the disease are still indeterminate. It is well known, for example, that the surface of the human body in health is the habitat of an enormous number of different parasites which are, for the most part, harmless or are effective as agents of disease only under certain specially favorable conditions of the body. Cultivation-experiments with the flora found on the eczematous skin have revealed a large number of parasites which together, if not singly, may be effective in producing some of its distinctive features. According to Unna, eczema is in these cases a chronic parasitic catarrh.

ECZEMA MARGINATUM is considered under the head of ringworm.

ECZEMA SEBORRHOÏCUM is described separately under that title.

Acute Eczema.—An acute attack of eczema may be ushered in by malaise, chilliness, or the recognized symptoms of the febrile state. With or without these prodromata the affected portion of the skin-surface becomes the seat of a burning sensation which is soon succeeded by redness and swelling. This tumefaction may occur upon one or upon several portions of the body at the same moment of time, and the disease throughout be limited to a single area or to several spaces; or it may extend from one to other or all regions. This extension may proceed by continuous development of the disease along the surface, or an eczema of the thigh may suddenly be followed by an eczema of the face, and this by an eczema of the scrotum. Extension of eczema by the last-described course may occur when no constitutional cause can be discovered and undoubtedly is due largely to the extraordinary sensitiveness of the skin when involved in an acute attack, in consequence of which the slightest friction, or even reflex irritation of the blood-vessels produces a new focus of the disease at a distant point. This consideration is of special importance. Patients will frequently point to an acute eczema upon several portions of the body widely separated one from another, and will urge this as an irrefutable argument in favor of the fact that they suffer from some “poison in the blood.”

The tumid and erythematous surface above described soon assumes the features of one or more of the types of eczema outlined in the preceding pages. In this manner the evolution of the disease occurs, and may continue for weeks, the patient, if unrelieved, being tormented by the itching, and, if the disease be extensive, being prevented from attending to his usual vocation. Acute eczema of severe grade will

frequently prostrate a strong adult, confining him to his bed-chamber and often to his bed. When there is a simultaneous febrile process the emaciation and adynamia are proportioned to its severity. Weeks and even months may elapse before recovery can be pronounced complete, subacute patches of the disease lingering here and there upon the surface, crust-hidden, scale-covered, occasionally oozing from recrudescence of symptoms. Recovery, even when complete, leaves the patient, it should never be forgotten, with a skin sensitive to irritation and more prone to a fresh attack of the disease than one long virgin of an inflammatory process.

Such is the course of an attack of acute eczema of severe grade. It must be remembered, however, that the process may be mild and subacute from the beginning, or again that a circumscribed patch of skin may exhibit all the features of vesicular eczema in an acute form, and under the influence of appropriate treatment may satisfactorily be relieved in the course of a few days. Lastly, acute or subacute eczema may be followed by chronic forms of the disease, the one passing into stages of the other by scarcely definable gradations.

Chronic Eczema.—The symptoms and pathology of chronic eczema are largely those of the acute form of the disease. The chief differences to be noted relate to diminished intensity of the inflammatory action, a marked tendency to recurrence and persistence of the process, and a preponderance of scaling and infiltration as contrasted with the active secretion and crusting of acute phases. It is important, however, to remember that chronic eczema is not only the frequent sequel of such acute phases, but is prone also to recurrent exacerbations of acute grade, during which the serous discharges, consequent crusts, and angry aspect of the affected surface do not fail to reappear. The itching so characteristic of the malady in all its manifestations is often more annoying than in the acute phases of the disease.

Chronic eczema may involve a limited region of the skin, or may invade the entire surface of the body from the head to the feet. Rarely thus generally developed, it is more frequently observed upon circumscribed patches of the integument, as, for example, the scrotum or the flexor surface of a joint, in which situation it may linger for years or even for a lifetime, now better and now worse, or disappear for brief periods only to return with each recurrence of its cause.

Etiology.—Eczema is a disease of both sexes and of all ages. Tendencies to all disorders of the body may be inherited, but eczema, as such, is not an inherited disease. No child was ever born into the world with an eczema. Certain individuals, however, show a peculiar susceptibility to eczema. In these persons the disease may occur without obvious cause, and is often produced by conditions, either internal or external, which are ineffective in the great majority of people. It is noted elsewhere that eczema in certain instances is due to parasites; but for the majority of cases it should, nevertheless, be classed with non-contagious affections.

In many cases no cause of eczema can be discovered beyond the causes which operate exclusively within the skin-organ and which are

proper to itself. These causes are necessarily obscure, and will so remain until we are in possession of far more knowledge than possessed at present as to the complex and inscrutably delicate processes by which innervation, nutrition, and new formation of the living matter of the skin are both conserved and impaired. The autonomy of the integument must be conceded to the extent recognized in other organs of the body. There are diseases of the liver that are referred neither to the blood, to the nerves, nor to the action of poisons. There are diseases of the heart that are induced by neither rheumatism nor syphilis. When the etiology of the disorders of all the viscera is perfected that of the skin displaying the lesions of eczema will assuredly be more distinct.

These remarks are justified by clinical facts. Eczematous affections may occur in individuals who are in every respect superb examples of good health, and whose bodies, after the most thorough and careful examination, fail to reveal either an external or an internal cause for the disorder. It is true that in a majority of cases eczema is associated with some disturbance of the general economy, but it occurs in persons who are affected with every form of bodily ailment, those suffering from acute and chronic disorders of every viscus and system of the body, and even those affected with other disorders of the skin.

Just what influence these varied systemic disorders may have upon eczema is not known. For the present they should be considered for the most part as either coincidences or as conditions favoring the development of diseases in general, eczema not excepted. By interference either with innervation, nutrition, development, or excretion, or with the performance of other important functions of the body, as well as by local and reflex irritation of the surface, these internal causes operate by inviting, aggravating, or prolonging an eczematous attack. Among such predisposing conditions may be named not only diseases, but also physiological states, such as pregnancy, lactation, and dentition; occupations necessitating inordinate fatigue of body or of mind, especially with the exclusion of sunlight; and lastly substances foreign to the body which produce an irritative action upon the mucous surfaces, such as certain dietary and medicinal articles, intestinal parasites, and instruments or fluids introduced into the mucous canals, as, for example, the male urethra.

The systemic conditions which occur most frequently with eczema are those dependent upon defects in digestion, assimilation, and excretion, such as constipation, the various forms of indigestion, rheumatism, gout, and allied conditions. In individuals suffering from these disorders the secretions from an eczematous surface have been found to contain an excess of uric acid, or have dried to form a visible crystalline deposit of urates on the surface. In these so-called "gouty eczemas" the disease commonly occurs independently of any recognized external cause, is symmetrical, recurrent, and it may be found in several members of a family or in successive generations. In some individuals, and frequently in children, certain articles of diet produce a dermatitis which persists and spreads as an eczema. Glycosuria and less frequently albuminuria may be discovered before or

after the appearance of an eczema. In the foregoing conditions, depending upon some form or degree of malassimilation, it is probable that toxins or imperfectly metabolized food-products circulating in the blood act either directly upon the excretory glands or upon the nerve-endings of the skin, or indirectly through vasomotor disturbances, or through so-called "reflex irritation." That the nervous system is closely related, etiologically and pathologically, to some forms of eczema is now recognized by most observers. Eczema occurs in various organic and functional neuroses, in simple nervous exhaustion or debility, in neuritis, neuralgia, or following injury to a nerve. It may even follow nervous shock. Through the action of the sympathetic and vasomotor nerves various organic diseases may cause an irritation or congestion of the skin, and thus contribute one or more factors to the production of an eczema.

Eczema seems, in exceptional cases, to bear some relation to spasmodic asthma, either coexisting with that disease or its attacks regularly alternating with asthmatic paroxysms. This relation may be due to the exquisite sensitiveness of the skin, the mucous membranes, and the nervous system exhibited in some patients.

Finally, anæmia, chlorosis, tuberculosis, scrofula, syphilis, or any other systemic disorder that lowers the general vitality and that of the skin, may favor the occurrence of eczema or of any other disease to which the skin may be exposed.

The external causes of eczema are identical with those of dermatitis, and are chemical, mechanical, or thermal in their action. As stated on a preceding page, no sharp distinction can be drawn between eczema and any other dermatitis due to external causes, but those forms of dermatitis which persist after the removal of the external cause are probably due in part to, and are continued through, the action of other etiological factors, and are conveniently classed with eczema. It is doubtful if any of the local causes of dermatitis, acting for a limited period, could produce a persisting eczema without the coöperation of other conditions, either internal or external. The large majority of all externally operating causes of dermatitis fail to be effective in the mass of individuals. Even the poison-ivy, a fertile source of the disorder in susceptible individuals, will fail to influence others. The late Professor Boeck, of Christiania, when he last visited America, rubbed the leaves of this plant over his hands and face in repeated efforts to produce the disease, and failed of the desired end.

Respecting the numerous agencies operating thus externally and capable of producing the disease under consideration, they can all be referred to either solar light and heat, to contact with foreign bodies in various fluid or solid states, to toxic agencies of a widely differing nature, to traumatisms in varying degrees, and to the action of parasites. Many of these agencies coöperate, some include others, and some become effective by aggravating a disease which others have engendered. The reader is referred to the chapters on General Etiology and Dermatitis for fuller consideration of this subject. It will be sufficient to note here that acids, alkalies, antimonial and mercurial compounds, mustard, sulphur, castor-oil, capsicum, arnica, turpentine,

chloroform, ether, alcohol, and a long list of other medicaments are capable of producing eczema when applied to the skin. The same statement is true of articles manipulated in many of the trades—those, for example, handled by the grocer, the baker, the confectioner, the seamstress, the ink-manufacturer, the mason, the cook, the gardener, the laundress, the painter, the dyer, the printer, the tobacconist, and the chemist. Then, too, the eczema of the person exposed to severe cold, or to intense solar light and heat aided by reflection from water, or even to excessive artificial heat, as the fire of a furnace, illustrates the action of other causes named. Pressure- and friction-effects are exhibited in the eczema produced by contact with gaiters, the edges of cuffs, trusses, crutches, and corsets.

Scratching is a fruitful cause of eczema when the skin is affected with pruritus as a distinct disease or as a symptom of other cutaneous disorders. Thus, it is efficient in urticaria, scabies, and the prurigo of Hebra; in the skin bitten by lice, insects, bedbugs, and fleas (which even without such interference are capable in many cases of inducing the disorder); and in the lower extremities when the skin of this region is distended by varicose veins.

Water is capable of exercising an injurious effect upon the skin to the extent of producing an eczema whether it proceeds from the sudoriparous glands in an excessive exudation of sweat which is not duly removed by ablution, or is applied externally as a fluid in excessively cold or hot temperatures, or in the vapors of the popular Turkish and Russian baths or, yet again, be rendered irritating by saline or other constituents.

The causes are at times climatic, the disease being worse in most people during the cold seasons. Cold winds and sudden temperature-changes, especially from warm to cold, will often aggravate and prolong an existing eczema.

The external sources of eczematous trouble named above should be regarded simply as suggestive illustrations. It should be borne in mind that every contact with the external world sufficiently severe or prolonged to awaken the resentment of the healthy skin may be followed by the protest of the latter in the shape of an eczema; and the same may be true when even the most trivial external accidents occur to the sensitive skin of certain individuals especially prone to the disease.

That many eczemas are modified in their course, if not indeed caused wholly or in part, by various micro-organisms is undoubtedly true. Aside from pus-cocci found in pustular eczema, however, no definite parasites have yet been demonstrated to be effective either in the production or in the modification of eczema. The healthy skin is the habitat of many forms of parasites, chiefly vegetable, and every skin-lesion is open to infection with any one of the many micro-organisms with which it may come in contact; hence, it is probable that the disease, once begun, is modified by secondary infections of one kind or another. Secondary pus-infection is frequently recognized, and the manner in which some forms of eczema respond to antiparasitic treatment leads to the inference that some of the many micro-organisms

found in the lesions are active in the prolongation, if not in the production, of the disease. Numerous parasites, including the morococcus of Unna, have been cultivated and described as the cause of eczema, but their etiological relations to the disease have not been demonstrated satisfactorily.¹

Pathology.—The pathological changes in eczema are those of inflammation of the skin, varying somewhat with the acuteness or chronicity of the process, and with the character and career of the exudate furnished in each expression of the disease. In most cases there is, first, a circumscribed or diffused hyperæmia of the affected part followed by dilatation and congestion of the blood-vessels of the corium, exudation of serum, diapedesis of white blood-corpuscles, and œdema.

The process probably begins in the papillary layer, from which it extends to the epidermis, to the deeper parts of the corium, and in exceptional cases inward even to the subcutaneous tissue. The œdematous infiltration may be quite extensive, producing marked swelling over considerable areas, or it may be slight and circumscribed. At times it appears only about the hair-follicles, producing perifollicular papules. The cell-infiltration about the vessels of the corium is formed in part of leucocytes, some of which wander outward into the rete, but is probably composed largely of young connective-tissue cells.

The epithelial changes in eczema vary greatly with the stage, intensity, and type of the disease. It is not determined definitely if these changes are always dependent upon and follow the conditions described above in the corium, or if they are usually, or even rarely, primary in origin. It is probable that they are secondary to the vascular changes in the corium, though some observers, including Unna and Leloir, believe that in most cases the epithelium is first affected. In practically all forms of eczema there is a parenchymatous œdema of the epithelial cells, especially of the transitional layers, as a result of which there is imperfect keratinization (parakeratosis) of the horny layers, the cells of which contain some moisture, retain imperfect nuclei, and are exfoliated in scales. In acute erythematous eczema running a brief course the epithelial changes may be limited to this parakeratosis, but in most cases they are followed by vesicle-formation in the upper part of the rete. The manner in which vesicles are formed is a matter of dispute. The first vesicles of acute eczema are apparently due to the formation in a number of contiguous cells of a clear space between the nucleus and the protoplasm, which enlarges until there is left merely a meshwork filled at first with serum, and later with serum, fibrin, and cellular fragments. If these spaces become filled with leucocytes as a result of more active degeneration of the cell-substance, or possibly as a result of secondary infection, they become pustules, the contents of which dry on the surface, forming thick crusts. In very acute cases,

¹ For a full discussion of the parasitic and other causes of eczema the reader should consult the Transactions of the Fourth International Congress of Dermatology, Paris, August 2 to 9, 1900; also papers by Morris, *Brit. Jour. of Derm.*, October, 1898; Roberts, *Ibid.*, 1899, pp. 7 and 66; Török, *Annal. de Derm. et de Syph.*, 1898, p. 1073, and 1899, pp. 30 and 37; Sabouraud, *Ibid.*, 1899, p. 305; Leredde, *Ibid.*, 1899, p. 438; Kromayer, *Arch. f. Derm. u. Syph.*, July, 1900; and Kaposi, *Ibid.*, October, 1900.

with an abundant exudate, the horny layer may be raised from the rete to form vesicles or bullæ. According to Unna, vesicles in the later stages of eczema are due solely to an intercellular œdema.

In eczema rubrum the horny layer is raised from the rete and destroyed without true vesicle-formation. The rete is thus exposed directly to the air, or is partly covered by an amorphous coating of dried serum and degenerated cells.

In the later stages of eczema there is more or less hypertrophy of the rete (Unna's acanthosis), with corresponding enlargement of the papillæ, forming papules and elevated, thickened areas. In chronic cases the cell-infiltration and proliferation in the corium become very conspicuous, producing the thickening of the skin so characteristic of patches of chronic eczema. In these cases the papillæ are larger than normal, and the vessels of the corium are dilated and surrounded by connective-tissue cells. The process may extend to the subcutaneous fatty layer, which then loses much of its fat, and becomes dense and attached to the skin. Hypertrophy of connective tissue and lymphatic obstruction with elephantiasic changes may follow. In these cases the sebaceous and coil-glands and the hair-follicles may be partially or entirely destroyed by undergoing degeneration and atrophy.

The fluid exuded in eczema, in vesiculation, or in a free discharge from the surface, is always characteristic. Though in the earliest vesicles it is a simple blood-serum, it soon becomes a yellowish-white, sticky, and syrupy liquid, feebly alkaline in reaction and depositing albumin in abundance when treated with heat and nitric acid. Exposed to the air, it desiccates in light-yellowish to brownish friable crusts resembling honey or gum.

Increase in the pigment-particles distributed to the epithelia of the rete is characteristic of the chronic forms of eczema, and more especially of those in which the circulation is somewhat impeded by the influence of gravity, as, for example, in the lower extremities. This increased pigmentation is true, however, of all diseases accompanied by an augmented afflux of blood to any part of the body, as, for example, over the surfaces of joints to which for many years stimulating embrocations have been applied.

The elevation of the body-temperature in the inflamed skin is somewhat proportioned to the rapidity of the process. In acute eczema such elevation may exceed 105.5° F. (41° C.), while in chronic eczema it can scarcely be appreciated.

The subjective sensations in eczema are due, undoubtedly, to an irritation of the nerve-endings in the corium and rete. It is not known if this nerve-irritation is secondary to other pathological changes in the skin, or if the nerves are primarily active in disturbing the nutrition and function of other tissues.

Diagnosis.—Though of a dozen consecutive cases of eczema no two may look alike, yet they all have some characteristics in common and the diagnosis is usually attended with little difficulty. Eczema in its manifestations is such a protean disease and is, moreover, of such frequent occurrence, that it is necessary to establish a differential diagnosis between it and a large number of other cutaneous disorders. The

more important of these disorders are named below in alphabetical order for convenience of reference, the distinctive peculiarities of each being briefly appended. In making a diagnosis it must be remembered that eczema may coexist with any other disease of the skin, and that it very frequently thus complicates such cutaneous disorders as seborrhœa, psoriasis, and scabies.

Acne.—Acne occurs chiefly on the face, the neck, and the back of the trunk, and its pustular forms may be mistaken for eczema of the same localities; but pustular acne is usually accompanied by a deeper-seated infiltration than the similar lesions of eczema, and this infiltration is also generally limited to the sebaceous glands or the periglandular tissue. In eczema the itching is often severe, while in acne the subjective sensations are those of heat or burning. Comedones intermingled with the pustules of acne will aid in distinguishing the two.

Erythematous eczema of the face is to be distinguished from ACNE ROSACEA by the more generalized infiltration of the former, its production of itching, and its greater diffusion over the face; while acne rosacea is limited more often to the cheeks, nose, and brow, and to the region adjacent to these parts. The patch of erythematous eczema is "hot," that of acne rosacea is cold, to the touch. The former is seen in infancy, the latter is rare in that period of life. Acne rosacea in many cases is distinguished readily by the development of visible blood-vessels in the skin of the cheeks or the nasal region. Lastly, in erythematous eczema the eyelids may suffer, while in acne rosacea this is the exception. In severe forms of acne the subepidermic pus-formation and the resulting scar will prove significant.

Dermatitis.—Dermatitis of artificial origin is to be distinguished from idiopathic eczema rather by its history than by special differences in the appearance or evolution of the lesions. In many cases the two affections are indistinguishable. A history of traumatism or of the external application of irritant or of toxic articles will often serve to distinguish the two. When the dermatitis has been produced by an externally applied irritant the resulting inflammation of the skin will often exactly outline the area of contact. Dermatitis of artificial production is usually sudden in its onset, the date of which will nearly correspond with the time of operation of an exciting cause. The subsidence of the symptoms after the withdrawal of the cause will also point to the nature of the affection. Eczema is also much more capricious in its distribution and career than dermatitis.

Erysipelas.—Erysipelas is generally accompanied by febrile symptoms; in many cases bullæ appear. The affected surface is reddened, much more swollen than in eczema, owing to the involvement of deeper tissues, and it exhibits besides a characteristic shining appearance, which is always absent in erythematous eczema. The line of demarcation between the affected and unaffected portions of the skin is usually distinctly defined in erysipelas, ill defined in eczema. Erysipelas is an exceedingly acute affection and spreads from one point to another with a rapidity that is never noticed in eczema; the latter disease, moreover, usually exhibits under a lens its minute papules or vesicles. In eczema also, when occurring upon the face in the erythematous

form, the scalp is usually spared, while erysipelas tends to invade the scalp and the regions covered by the beard.

Erythema.—Eczema is to be distinguished from the forms of erythema which are due to hyperæmia only, by the presence of an inflammatory process. The erythema simplex which advances to exudation at once transgresses the artificial line of distinction between the purely congestive and the purely exudative disorders. It must, therefore, be remembered that many eczemas begin as erythemata, and that clinically the latter may represent but a stage in the morbid process. The discharge in erythema intertrigo results from imprisoned or from chemically altered sweat, and will not stiffen linen as does the serous exudation of vesicular eczema, for example. Erythema multiforme, an affection really on the border-line between the two pathological classes here sought to be distinguished, will be recognized by the absence of severe itching and the recurrence of the disorder at certain special seasons of the year; while Erythema papulosum, E. tuberosum, and E. nodosum display solid elevations of the skin-surface much exceeding in size the minute lesions of papular eczema.

Herpes.—Eczema is so associated with the occurrence of a vesicle in the minds of many that other vesicular disorders are likely to be confounded with it. But in herpes febrilis the vesicles are usually grouped about the mucous outlets of the body, and when actually under observation they exceed in size the minute and transitory lesions of vesicular eczema. In herpes zoster, with the limitation of the eruption in the course of a nerve to one side of the body and the production of grouped vesicles of a larger size and more persistent type, there is commonly a history of precedent or coincident neuralgic pain. The subjective sensation in the skin is a decided burning rather than itching, and there is a possibility of the subsequent production of scars.

Impetigo.—In these forms of disease pustular lesions are usually isolated, do not spring from an infiltrated surface on which other lesions may be visible, and are unaccompanied by the intense pruritus which is characteristic of eczema. The pustules, moreover, are larger, and the resulting crusts, as a rule, are bulkier and darker colored than those in eczema. Again, in pustular eczema the cutaneous affection usually occurs in one or more patches, while in impetigo a dozen or more isolated pustules may be irregularly scattered over the entire surface of the body. In impetigo there may be a history of extension of the disease from one member of a family to another.

Lichen Planus.—Papular eczema may be confounded with lichen planus, but in the latter disease the typical papule has an irregular or polygonal base; a flat or umbilicated apex, which is covered with a thin, closely adherent, varnished-looking scale; and a violaceous or dull-crimson hue. The papules of eczema have round or oval bases, acuminate or rounded summits, and are brighter red in color. They also form more rapidly and undergo change of type more frequently than the more persistent papules of lichen planus. The patches of lichen planus are more sharply defined than those of eczema, and are usually angular or linear in outline. The lesions of lichen planus on disappearing leave a characteristic brown or sepia-tinted pigmentation.

Lupus Erythematosus.—Lupus erythematosus greatly resembles certain forms of squamous eczema. The great chronicity of lupus; the firm attachment of the scales; the symmetrical distribution of many patches upon the face; the association of some forms of the disease with the sebaceous glands; the definite border of each involved area; and, above all, the discovery of a cicatrix left by the morbid processes will sufficiently distinguish the disorder. In eczema there are usually itching, often vesiculation, more rapid extension of the borders of a single patch, and scales much more loosely attached than in erythematosus lupus. The scales of eczema are never provided, as in lupus erythematosus, with stalactiform plugs on the inferior surface.

Mycosis Fungoides.—Mycosis fungoides, in its earliest stages, may be indistinguishable clinically from some forms of localized or even generalized eczema. As a rule, however, the early erythematosus and eczematoïd lesions of mycosis fungoides can be recognized by their characteristic gyrate outlines, assuming, as they do, the shape of a kidney, horseshoe, half-moon, and other fantastic, more or less circinate, forms. These figures may change frequently in form and location, or may disappear spontaneously, to return in the same or in new sites. They differ further from eczema in being located on any or every part of the body, independently of external influences, and in failing to respond to treatment during months or years. After the formation of characteristic thickened and elevated plaques the diagnosis is not difficult.

Lupus Vulgaris.—Lupus vulgaris is readily distinguished from eczema by its more chronic career, by its larger papules and tubercles of dark reddish-brown hue, and by every one of its destructive processes, none of which is ever recognized in eczema.

Pediculosis.—As eczema is often induced by lice upon the head, the pubes, or the clothing, it is always necessary to exclude the operation of such causes for both diagnostic and therapeutic purposes. Eczema limited to the pubic region or to the pubic and axillary regions should suggest careful examination of the skin and the hairs for the discovery of the crab-louse. As for the pediculus corporis, it should be the rule of the physician, invariable and never to be forgotten (whatever the social position or refinement of his patient), to search in a suspected case for evidence of the parasite upon the under surface of the clothing worn next the skin, at the instant of its removal and while the patient supposes him to be busied with the inspection of the cutaneous lesions. The excoriations produced by scratching wounds inflicted by body-lice are usually out of all proportion to the amount of skin-disease present; and this excoriation is the most significant of all symptoms next to the discovery of the *corpus delicti*. Head-lice may precede or may follow eczema of the scalp, but either they or their ova (nits), clinging in numbers to the hairs, will be visible to him who looks carefully for them.

Pemphigus and Pityriasis Rubra.—The large isolated bullæ of pemphigus vulgaris are never seen in eczema. In pemphigus foliaceus the lesions are succeeded by the formation of pastry-like crusts, serous exudation, considerable soreness, and the eventual production of an

extensive and usually fatal exfoliative dermatitis. Marasmus gradually or in some cases rapidly ensues, while, as a rule, itching and infiltration are not present. The disease known as pityriasis rubra is equally rare and fatal, and, though unattended with the production of bullæ, is characterized by an abundant epidermic exfoliation; itching and infiltration being either entirely wanting or insignificant in comparison with the other symptoms present. The scales, too, are papery, large, and thin; there is no vesiculation and moisture, and little, if any, infiltration of the skin. The integument is, moreover, of a uniformly reddish hue. Both pemphigus foliaceus and pityriasis rubra are particularly liable to be complicated with chills or with uncontrollable diarrhœa. Without question, many of the reported cases of so-called "pityriasis rubra" are instances of squamous eczema or of simple exfoliative dermatitis. Here the localization of the disease to one or more patches upon the body, the severe itching, and the distinct infiltration of the patch point to the eczematous character of the disease. Observation of such patients will finally convince the physician, in many cases, that there is occasional weeping from the surface.

Pityriasis Rubra Pilaris.—Often this disease resembles in a high degree, and it may indeed be confused with, the squamous forms of eczema. In general there are not found in eczema characteristic lichenoid papules formed about the hair-follicles, with their hyperkeratinized cap sheathing the follicular orifice. Nor is the selection of the extremities, and especially the dorsal aspect of the fingers, characteristic of eczema. In eczema there are usually distinct marks of scratching that may wholly be wanting in pityriasis rubra pilaris; and the latter has in most cases a more chronic course.

Prurigo.—In the prurigo of Hebra, a disease exceedingly rare in America, there are infiltration, intense itching, and numerous minute and larger papules. But this disease usually occurs within a year or two after birth and lasts for a lifetime, extending generally over the greater part of the body, sparing only the palms and soles (which eczema does not), and is accompanied by inguinal adenopathy.

Pruritus.—In pruritus, often confounded with prurigo, there is itching without lesion of the skin save that induced by the nails to relieve the sensation. Hence, pruritus without scratching will not reveal a cutaneous disease, while pruritus with scratching will exhibit either excoriations or an eczema induced by the attacks made upon the skin. The latter condition, however, is rarely noted. The distinction will be clear when it is remembered, first, that pruritus is usually of a paroxysmal character, being worse regularly at certain hours or seasons; second, that pruritus not originating in a cutaneous lesion, but indirectly producing the latter by the medium of the finger-nails, never exhibits as much cutaneous excoriation as the skin bitten by lice or attacked with eczema. The impressive features here are always the disproportion between the complaint of the patient and the visible symptoms, and the vast preponderance of all lesions in those regions of the body most accessible to the hands, such as the anterior faces of the limbs, the genital region, the lower belly, etc.

Psoriasis.—Psoriasis and eczema in typical forms are distinct.

Variations in type from one to the other furnish many obscure cases.

The following are the chief diagnostic points in psoriasis: sharp definition of contour of patch; abundance and lustrous hue of the scales; absence of moisture; vascularity of tissue beneath the scales; sites of election on posterior aspect of the trunk and extensor surfaces of limbs; chronicity in course; uniformity of lesions; and usually absence of itching. In eczema there are an ill-defined contour; usually scanty scales not having a nacreous hue; a preference for the flexor surfaces of the extremities, though the disease may occur in any portion of the body; generally, at some period in its course, a history of moisture; polymorphism, as regards lesions; and a marked intensity of subjective sensations. Upon the scalp psoriasis is prone to extend beyond the hairy border in a fillet stretching across the upper portion of the forehead, thence irregularly down in front of the ears; while eczema of the face, when the scalp is also invaded, departs boldly from the hairy parts to the lower forehead, the lips, nose, cheeks, or chin, regions which are relatively spared by psoriasis. Finally, the two diseases, in doubtful cases, will generally be distinguished by carefully searching the entire surface of the body, upon some part of which in psoriasis there will usually be discovered a tell-tale patch of typical appearance.

Scabies.—Scabies is really an artificial eczema induced by the incursions of the *acarus scabiei*, and its lesions are thus those of eczema. In scabies, however, the pruritus is intense and the recently formed papules, vesicles, and pustules are more distinct and isolated than in eczema. The discovery of the presence of the parasite, especially if there be a history of contagion, and the localization of the disease in its sites of preference, will at once determine the diagnosis. Scabies never attacks the scalp. Its sites of preference are in both sexes the fingers, hands, wrists, and axillæ; in women the breast and the nipple; in men the penis; and in children the buttocks. The presence of the acarian furrow, if the disease has existed for some time, and the appearance of minute blackish dots or points upon or about the lesions, usually suffice to establish the nature of the disease.

Seborrhœa.—Seborrhœa and eczema may coexist, either disease preceding the other. Typical forms of each are readily distinguished. In eczema there are infiltration and much consequent itching; in seborrhœa there is neither. The scales of seborrhœa are more voluminous and greasy than those of eczema, are freely shed from the surface, and are seated usually upon an integument of scarcely altered hue; in eczema the scales are dry, scanty, and more firmly attached to an hyperæmic base. Seborrhœa of the hairy parts is generally symmetrically diffused; eczema, though occurring with ill-defined contour, is rarely as symmetrical, usually more acute, and is seldom followed by alopecia. Upon non-hairy portions of the body the same distinctions can to a great extent be observed. The crusts of eczema removed from the face generally disclose beneath them an oozing surface, while the under surface of these crusts never exhibits the stalactite-like prolongations which pass from the under surface of seborrhœic crusts into the

patulous orifices of the excretory ducts of the sebaceous glands. In eczema seborrhœicum the features of both diseases are almost completely fused.

Sycosis.—Both the hyphogenous and the coccogenous forms of sycosis are limited to the region of the beard, while eczema of the hairy portions of the face will usually be found to affect other parts. In eczema the itching is severe, the exudation spreads beyond the limits of the beard, and the discharge is characteristic; while in both forms of sycosis there is less oozing and the subjective symptoms are trivial. The discovery of the parasite in the root or the shaft of the hair will at once distinguish the hyphogenous forms of the disease. In coccogenous sycosis each pustule is perforated by a hair. Eczema limited to the region of the beard is even rarer than the two varieties of sycosis. The circumscribed indurations and tuberculations of the affection produced by the trichophytions, as well as the loosening of the hairs in their follicles, constitute further distinctive differences.

Syphilis.—Several syphilitic eruptions resemble certain forms of eczema. In the eruptions due to syphilis, however, there is usually a history of infection; of involvement of the glands and mucous surfaces; of ulceration and cicatrices in advanced periods, and, especially in the case of infants with an eczema-like eruption, of a history of snuffles. The intense itching of eczema is characteristic of no one of the syphilides, and the latter are remarkable for their tendency to occur with a circular or partially circular outline, and to be covered with bulky malodorous crusts. A point worthy of note is that compared with chronic eczematous affections a syphilitic eruption limited for an equal period of time to one locality will often ulcerate or exhibit evidences of repair by scar-tissue, no such results occurring in eczema.

Syphilis of the palms and soles exhibits very distinct outlines in the usually circular, circumscribed, and deeply infiltrated patches present, which are often symmetrical in development, or are at least situated on both sides of the body even if more fully developed upon one limb. Syphilitic pustules upon the scalp usually rise above superficial but well-defined ulcers. Syphilitic eruptions encircling the mouth in children are less angry-looking and formidable than those of severe eczema of the same region, being often made up of flattened papules, moist or scaling, grouped in circles about the lips, with mucous patches at the angles.

Tinea Circinata.—In ringworm there should be a history of contagion, microscopical discovery of the vegetable parasite, distinct contour of all separate patches, and absence of marked subjective sensations and of discharge. These symptoms are not those of eczema. In ringworm of the scalp the hairs loosened in their follicles are usually either brittle or are actually broken at a short distance from the scalp; the scales are fine, dirty white, and not torn from the surface by the finger-nails. In eczema the hairs are unaffected, and their extraction is productive of pain. In ringworm of the body the patches are distinctly circular, are more scaly or papular at periphery than centre, and, moreover, yield with promptness to the action of a parasiticide. Occurring about the thighs and anogenital region, the disease may be

complicated by eczema, but the characteristic “festooning” of the advancing border of the patch downward along the thigh, or upward over the pubes, will suggest a microscopical examination of the scales scraped from the surface.

Tinea Favosa.—The large, friable, dirty crusts of an old and neglected favus of the scalp might be mistaken for the crusts of eczema of the same part; but here the exudation is slight, and there is little scratching, as in eczema, hence no history of discharge. The odor, moreover, is characteristic. In case of uncertainty a careful search would reveal a few characteristic cup-shaped and yellow crusts, or the microscope would demonstrate the parasitic nature of the disorder.

Tinea Versicolor.—In this disease, also, the microscope will reveal, beneath the epidermal plates, the spores and filaments of the fungus which produces the ailment. From eczema the disease is easily distinguished by the absence of infiltration and of any history of inflammation; by the very slight subjective sensation it produces; by its peculiar fawn- to chocolate-colored, slightly yellowish patches, which are covered with superficial furfuraceous scales, are limited to the covered parts of the body and often to the anterior surface of the trunk, and are readily removed by the action of a parasiticide.

Urticaria.—In papular forms of the disease there may be a resemblance to eczema. This resemblance is more marked in children, as here the two diseases may be intermingled. Characteristic wheals often occur by the side of eczematous patches, but, as a rule, urticarial lesions are less grouped, more generally disseminated, more evanescent, and much less scratched.

Treatment.—The treatment of eczema usually presents a complicated problem. The causes of the disease are numerous, frequently obscure, and when discovered are often difficult to remove. Eczema shows little tendency to spontaneous recovery, but tends rather to persist, to spread to contiguous or distant parts of the body, and to recur. Although many cases of the disease respond well to local treatment alone if the affected surface can be given absolute rest and kept constantly covered with the desired dressing, such ideal treatment can rarely be carried out except in hospital-patients. Moreover, in many cases of eczema the general health of the patient must be improved before local treatment can be effective. The nutrition and functional activity of the skin depend largely upon the condition of the general system, for the skin is but one of many organs in a complex organism. It follows also that every serious disease of the skin must interfere more or less with the general health. The fear that too rapid a cure of eczema may result in disease of deeper-seated organs is baseless. The sudden improvement or disappearance of an acute eczema coincidently with the development of a pneumonia or other grave disorder may be explained by the rapid withdrawal of a large amount of blood from the skin-surface to the newly congested organ. The improvement in the eczema is thus a result and not a cause of the deeper-seated disease.

The treatment of eczema requires both local and constitutional management.

(A) Constitutional Treatment.—In many cases internal treatment may be wholly ignored, and eczema be successfully controlled by local measures alone, even though there be coincident systemic disease. Often, however, the eczema is an external expression or result of other pathological conditions which must be removed before the eczema can be permanently cured. These systemic disorders vary widely, ranging through the whole field of internal medicine, including hygiene. In these pages a few suggestions only can be given regarding the internal treatment of eczema, much being left to the practitioner's knowledge of general medicine. It is often necessary not only to relieve disease of other organs, but also to study the patient's temperament, habits of eating, drinking, bathing, sleeping, etc., before an obscure cause of a stubborn eczema can be found and removed.

Diet.—No absolute rule can be laid down regarding the diet in eczema. Each individual should be given the quantity and quality of food that will best nourish his body without interfering with digestion and elimination. The anæmic, strumous, and poorly nourished subject should be given sufficient fresh beef, mutton, eggs, milk, cream, vegetables, and other nourishing foods. Cod-liver oil, butter, and other fats, when easily digested, are of special value, as also are the various malt-preparations, particularly when digestion of the carbohydrates is at fault. In the plethoric, the overfed, the gouty, and in those suffering from faulty digestion and elimination, a diet restricted to the lowest point consistent with the health of the individual is often of the greatest importance. In these cases excellent results are obtained by limiting the patient to a diet of bread and milk, or of milk alone, or of milk and seltzer-water, for several weeks. In general, the diet allowed the eczematous patient should be limited to the most digestible articles of food, and should exclude those (a list of which is given in the chapter on Urticaria) capable of exciting cutaneous irritation. Cooked vegetables, fruits, and a small quantity of fresh meats may be permitted; but starchy articles in excess, hot breads and cakes, pastry, confectionery, cheese, pickles and pickled meats, cucumbers, cabbage (both raw and cooked), parsnips, turnips, beans, oatmeal, cracked wheat, pease, celery, shell-fish, salted fish and meats, pork, and veal should be avoided. Milk, when not the source of constipation, may be drunk, but not during the meal-hour. Coffee, tea, and cocoa are in the doubtful list, as they are positively injurious to some patients and apparently without effect in others. Tobacco should always be forbidden to male patients suffering from a serious eczematous attack. Alcohol in every form is contraindicated save in condition of debility, or in case of its previous habitual use in moderation by persons of advanced years. In gouty patients the dietary should be of the strictest appropriate to that condition, and in diabetic eczema the regimen proper in glycosuria is observed with great benefit in most cases.

Internal Medication.—There are no specifics for eczema. Such remedies only should be given as are indicated by the general condition of the individual. Over-medication and uncalled-for dosing with "blood" medicines is a common error in the management of this disease. The number of patients presenting themselves for treatment

of eczema, both in dispensaries and hospitals and in private practice, who have aggravated their condition by medicaments they have swallowed is incredibly large. Men and women, infants and adults, those who have been under the charge of physicians, and those who have purchased drugs of an apothecary at the suggestion of the latter or of their friends, exhibit patches of acute or of chronic eczema aggravated by the injudicious use of arsenic, potassium iodide, potassium bromide, Donovan's solution, and other harmful preparations contained in the various "blood-purifying" remedies sold in the shops. The practitioner whose patient comes to him after making trial of any such remedies is strongly urged to set aside the operation of such mischievous agents, and to watch the eruption carefully while their effect is vanishing. The result is often marvellous. The chief object of the constitutional, and also of the local, treatment of eczema is to remove all sources of irritation to the inflamed skin.

An attempt to relieve pruritus by the use of anodynes internally is rarely necessary, and usually aggravates the disorder. Opium and its preparations increase the pruritus, though in full doses they relieve temporarily. With some patients, and especially children, full doses of quinine may relieve itching. Less frequently full doses of calcium chloride, largely diluted with water, may serve the same purpose. In an emergency, chloral, phenacetin, sulphonal, or even the bromides, may be given, but it must be remembered that, like opium, they are all liable to aggravate the pruritus after the first anodyne effect has passed.

In the management of acute eczema cooling draughts are useful; and in all cases occurring in patients who are plethoric, who are constipated, or who suffer from other symptoms of imperfect excretion, aperients and cathartics are needed. Often a brisk mercurial purgative in the form of blue mass or the compound cathartic pill may be ordered at the outset. Five grains of blue mass or three grains of calomel may be given each night, followed by a saline laxative in the morning, for ten days or two weeks. A tenth of a grain of calomel combined with sodium bicarbonate may be given every half hour for a day or two, and then three or four times daily for two weeks or longer, if at the same time salines are used to keep the bowels freely open. The rhubarb-and-soda mixture answers well in some cases. Podophyllin, or the familiar combination, nux vomica, aloes, and belladonna, may be substituted for these articles. The saline cathartics, whether employed in medicinal formulæ or in natural mineral waters, such as the Hathorn, Carlsbad, Hunyadi János, or Friedrichshall, are exceedingly useful in the management of most cases. The following is a valuable combination often advised for cases in which both iron and magnesium sulphate are indicated:

R	Magnes. sulphat.,	℥ij;	60	
	Acid. sulphur. dil.,	f ℥ij;	8	
	Ferri sulph.,	℥ss;		66
	Sodii chlorid.,	℥j;	4	
	Cardamom. tinct. comp.,	f ℥j;	4	
	Aq. dest.,	ad ℥ss;	240	M.

Filtra. Sig. A tablespoonful before breakfast in a tumblerful of cool or of hot water.

An excellent remedy for some cases is from 15 to 20 drops of a fluid containing 2 parts of the fluid extract of cascara sagrada to 1 part each of glycerin and tincture of aloes, the dose to be taken at bedtime or before breakfast in a small glassful of water. A full dose of castor-oil on retiring is an excellent remedy in many neurotic cases, and may be continued for weeks if needed.

In some cases of renal derangement the alkaline diuretics are indicated, such as potassium acetate, carbonate, or citrate, administered with nitre, squills, caffein, or lithium benzoate in from 3 to 5 grain (0.26–0.33) doses before meals, and in gouty cases colchicum, Vichy water, etc. Distilled or other pure water, or in suitable cases the alkaline spring-waters, taken in large quantities before meals and between meals, are very valuable as diuretics and as a means of encouraging elimination. In patients suffering from acid dyspepsia liquor potassæ, sodium bicarbonate, or ammonium carbonate may be required. Salol and other intestinal antiseptics are often of value.

Aloes and iron, or aloes and ergot, are indicated in special cases. Where diuretics and alkalies are both indicated the following formula is often of service:

R	Magnes. sulphat.,	℥ss;	15	
	Magnes. carbonat.,	℥j;	4	
	Colchici tinct.,	f℥ss;	2	
	Menth. pip. ol.,	℥ij;		2
	Aq. dest.,	f℥vj;	180	M.

Sig. Two tablespoonfuls in a wineglassful of water every three or four hours.

Cod-liver oil is indicated in all cases of struma and tuberculosis; calcium phosphate in bronchitis; iron in anæmia and chlorosis; strychnine, hypophosphites, and other nerve-tonics in neurotic cases.

In fleshy children affected with eczema capitis calomel internally is a valuable remedy, from $\frac{1}{2}$ grain to 2 grains (0.03–0.133) of calomel, with 2 to 3 (0.13–0.20) of rhubarb, rubbed up with 5 (0.33), of calcined magnesia, may be given once in a day to an infant; or $\frac{1}{20}$ of a grain (0.003) of calomel, rubbed up with sugar of milk, may be given, three times daily, for ten or twelve days. Small doses of the unsipped syrup of rhubarb, with or without magnesia, may be required for the constipation of infants, or from 1 to 3 drachms (4.–12.) each of powdered rhubarb and sodium bicarbonate in 4 ounces (120.) of peppermint-water, of which a teaspoonful may be administered two or three times or oftener daily. Quinine, strychnine, syrup of ferrous iodide, and wine of iron may also be used with advantage when indicated in these little patients.

In full doses, and especially in children, quinine sometimes acts as an antipruritic. For the same purpose calcium chloride in full doses answers well in some cases. Antimony in small doses as an alterative and nerve-tonic or in large doses to reduce vascular pressure is often of value.

Beside those enumerated above may be named the following articles, which, after internal administration, have been reported as efficient in the hands of various authorities: calx sulphurata, viola tricolor, sodium

hyposulphite, ichthyol, chrysarobin, tar, carbolic acid, sulphur, pilocarpine, and turpentine.

Arsenic, which has been so largely employed by the general practitioner in eczema and in other disorders of the skin, is an uncertain remedy in all cutaneous diseases; it is equally uncertain in eczema, and has unquestionably aggravated as many cases as it has relieved. Its value in some chronic papular and squamous forms of the disease is undoubted, and in small doses as a nerve-tonic it is often of value, but it should never be given in acute cases or where there is any digestive disturbance. If arsenic, which certainly does possess an influence over the skin, has been demonstrated to have little or no value in the large proportion of all cases of eczema, what can be said for the host of other drugs, too commonly employed for a similar purpose, that are inferior to arsenic in their cutaneous effects? Sunlight, fresh air, suitable clothing, and due *régime* as to pleasure and business, must be, for many patients, controlled by the physician. These agencies do not cure eczema; but they do much to aid in its management; they may do more, if neglected, to furnish sources of its aggravation. Crocker advocates counter-irritation over the spine—over the nape of the neck for eczemas of the upper segment of the body; over the dorso-lumbar vertebræ for the lower parts. Jackson has used the ice-bag with advantage in the same way. Counter-irritation of the corresponding part of the lateral half of the body for the relief of an eczematous patch of long standing limited strictly to the other side may also be employed in rare cases.

(B) Local Treatment.—Local treatment is of value in all cases of eczema, is usually imperative, and often is the only treatment necessary. The remedies recommended for external application in the various forms and phases of eczema are so numerous and varied that barely to mention all would require many pages; and not even the expert can be sufficiently familiar with them all to use each intelligently. A comparatively small number of remedies skilfully handled will suffice in all but rare cases. It often happens that in a given type of the disease a treatment which one physician uses with brilliant success fails utterly to serve a fellow-practitioner who is equally skilful, but who is less familiar with this particular method. One of the most common errors in the local treatment of eczema lies in the frequency with which, in a difficult case, a succession of new medicaments is tried instead of studying more carefully the details of application of familiar remedies. It must not be forgotten that each individual skin, like its possessor, has its idiosyncrasies. A remedy that in a given type of the disease will commonly give prompt relief, may in others prove of no benefit and even aggravate the condition. An idiosyncrasy may exist forbidding the use of particular drugs, such as carbolic acid, glycerin, resorcin, etc., or it may prevent the employment of certain classes of applications, as, for example, ointments, powders, lotions, etc. The choice of remedies must further be influenced in each case by a consideration of the type or phase, severity, and duration of the disease, of the region and extent of surface involved, of the age, occupation, and climatic and other surroundings of the patient.

The general objects and principles of treatment in eczema may conveniently be grouped under the following heads: (1) exclusion of all sources of irritation to the skin; (2) relief from pruritus, burning, and other morbid sensations; (3) antiseptic dressing; (4) reduction of local congestion in acute, and stimulation of circulation in chronic, cases; (5) repair of the horny layer in acute, and destruction of the thickened and abnormally keratinized horny layer in chronic, forms of the disease.

1. EXCLUSION OF ALL SOURCES OF IRRITATION.—This is the most important, the most varied, and often the most difficult and complex problem of all. Its full solution, however, will in the majority of cases fulfil all the other indications for treatment. Frequently a simple protective dressing is all that is required; more commonly the object is not so readily attained. The irritation of the skin due to its malnutrition or to conditions of ill health must be relieved in accordance with the principles of internal medicine, as has been indicated in discussing the internal treatment of eczema.

The exclusion of all sources of irritation necessitates, secondly, the avoidance of all injurious external contacts. Only gross ignorance or carelessness will overlook the fact that the inflamed skin, like the inflamed bone or the inflamed bladder, calls imperatively for rest. The prevalent idea, however, is that the patient with an inflamed joint retires to his couch or bed, while the patient with an eczema, if his disease be not so formidable as to necessitate temporary withdrawal from the pursuits of business or of pleasure, belongs always to the peripatetic class. He consults a physician, swallows some medicine, anoints his eczematous skin with a salve, and returns to the vocation in which his complaint was begotten. The baker goes to his baking; the seamstress still pushes her needle through the dyed fabrics which first injured her hand; the man with an eczema of the thigh walks the street with his trowser-leg rubbing the affected surface; the nursing-mother with an eczema of the inframammary region still suffers the milk chemically altered in the heat of summer to flow over the tender surface of the breast, or in the case of her infant affected with eczema stuffs the folds of a coarse diaper half laundered or yet covered with the dejection from the bowels between its thighs and over the anal region. When a patient from necessity or from choice continues in the vocation or conditions which are largely or wholly responsible for the persistence of his malady he should distinctly understand that his recovery will be much slower and more uncertain than it would be with the rest and protection that every inflamed organ demands.

Next is involved the exclusion of all topical irritants (in the hands of either physician or patient) designed to relieve the disorder, but having a precisely opposite effect. The number and variety of these medicaments are far from being commonly appreciated; some are useful in advanced stages of the disorder, and harmful in its earlier periods. These articles, which are generally ordered by persons with a limited experience in diseases of the skin, represent a long list of stimulating and astringent ointments. Some are employed in sheer ignorance of their effects, as, for example, crude petroleum, strong acids and alkali-

lies, silver nitrate, turpentine, and concentrated solutions of corrosive sublimate, intended to "burn out" the disease.

Lastly, the exclusion of all sources of irritation necessitates protecting the involved surface from the excoriations and other traumatisms produced by scratching, rubbing, and excessive washing of the eczematous skin, and from the irritation caused by exposure of the inflamed surface to the air. The various applications and protective dressings here serve their purpose, but in the case of adults some restraint to prevent rubbing and scratching is also needed; in the case of infants this restraint may need to be enforced. Fixed dressings are often of great value in immobilizing a part, or in preventing friction, bruising, or other injury to the inflamed surface. A light elbow-splint to prevent flexion of the joint often is of service in keeping the fingers from the face. Most patients have to be repeatedly and forcibly impressed with the fact that a few minutes of scratching or rubbing, or one untimely washing of the inflamed surface, or its unnecessary exposure to the air may undo all that has been gained in several days of patient and successful treatment. This exclusion of all sources of irritation to the skin is essential to the proper treatment of every case of eczema.

The great importance of rest and freedom from irritation of all sorts in eczema is well illustrated by the newborn infant, whose sensitive skin responds early to its first harsh acquaintance with the outer world by an explosion of eczema. It is a fact of importance that no child is born into the world eczematous. If the nervous system alone were responsible for infantile eczema, such a result might occur, for that system is not only capable in intra-uterine life of producing club-foot and other deformities, but also of influencing skin-disorders. In the case of pigmentary moles visible at birth the lesions are often located along the distribution of one or more nerves. If the blood alone were responsible for eczema, the foetus surely might display its lesions, as it does those of syphilis. Animal poisons, as those of variola and scarlatina, do not spare the unborn child; nor is it exempt from certain diseases of the integument that are generally regarded as due solely to tissue-changes, since newborn infants are occasionally seen affected with ichthyosis or sclerema neonatorum.

Why is the tender skin of the foetus exempt from every form of eczema, and the tender skin of the infant accessible to each by such various approaches? Will it be responded that the child has begun to respire and digest for itself; that it has become suddenly strumous, darts, rheumatic, arthritic, gouty, or herpetic; that its standard of health is impaired; that it is suffering from assimilative, nutritive, or nervous debility, or from any one of the other numberless perturbations to which eczema may be ascribed? While nutritive and other constitutional changes undoubtedly have their influence, it would certainly seem that the difference between the child unborn and the child born is, as regards eczema, a difference chiefly of skin-protection and skin-exposure. The former enjoys what White has aptly termed a "prolonged, placid, subaqueous life." Anointed with unguent and immersed in its water-bath of grateful temperature, its skin cannot be

fretted to produce an eczema. The child, abruptly and often rudely brought into contact with the outer world, may speedily exhibit the most formidable symptoms of the disease.

If any apology be needed for the space devoted to this part of an exceedingly interesting subject, it must be based upon the great frequency of the disease, the wide diffusion of erroneous doctrines respecting its nature and the method of its management, and the mischief resulting from the too common aggravation of the malady in its earliest manifestations, due largely, on the part of both physicians and laymen, to a lack of appreciation of the fact that an inflamed skin needs rest and protection as much as does any other similarly affected organ of the body.

2. RELIEF OF PRURITUS.—The itching, burning, and other sensations which accompany eczema are usually largely or entirely allayed by the complete protection of the skin from irritation. Antipruritics are, however, frequently desirable and necessary. Among the best are carbolic acid, hydrocyanic acid, camphor, menthol, and salicylic acid, each in the strength of 0.5 to 2 per cent. (rarely stronger) in lotions, ointments, jellies, pastes, etc. Saturated solutions of boric acid, or the lead-and-opium wash, answer in many acute cases. If a remedy does not relieve the itching, it should be changed for one that will, unless the fault lies in the method of application. The most common error in the use of local remedies is found in the five- and ten-minute, or longer, intervals during which the skin is not protected, either as a matter of convenience or of appearance or as a result of carelessness in removing and reapplying the dressings. Exposure to the air for a few seconds only of an acutely inflamed surface may be sufficient to arouse a violent attack of itching or burning. The relief of pruritus by the use of drugs internally is considered under the head of internal medication.

The necessity of relief is so imperious that at times the itching overshadows all other symptoms of the disease. He who has never studied the case of a man, a woman, or a child, possessed with a furious impulse to relieve an intense eczematous pruritus has not yet completed an education in medicine. This fury, for such it really is, has been likened to the sexual orgasm, with which it is undoubtedly allied, as the two are not rarely coincident when there is severe anal or genital itching. The features of the patient are drawn; he is but half-conscious of his ejaculations and surroundings; with his nails, or other object which he employs, he attacks the too vulnerable skin with an incalculable savagery. In these exaggerated paroxysms nothing but blood will suffice for his relief. Not until the torn and wounded surface oozes with red drops at every point does he emit the sigh which indicates that his desire is satisfied. Men and women forcibly withheld from doing themselves this severe damage will at times exhibit the muscular spasm, facial expression, and movements of body scarcely distinguishable from the symptoms of *petit mal* in an epileptic seizure.

3. ANTISEPTIC DRESSING.—It is not known to what extent eczema may be due to, or may be modified by, the various micro-organisms that come in contact with the skin, but severe cases are undoubtedly

complicated and prolonged by the action of such bacteria, and it is well in every case, when possible, to prevent their activity. Simple protection does much to accomplish this end, while, fortunately, most of the remedies used as antipruritics are also more or less parasiticidal. In certain forms of the disease, such as seborrhœal eczema, sulphur, resorcin, and other parasitocides are necessary.

4. RELIEF OF LOCAL CONGESTION.—This is accomplished by position, compression, internal treatment, and largely by the removal of external irritation. Occasionally a direct astringent action may be obtained by the use of lead-water, lime-water, or by some of the rapidly drying jellies or glycerogelatin preparations. In chronic eczema passive congestion is removed by means of stimulating washes, soaps, ointments, etc.

5. REPAIR OF THE EPIDERMIS.—If the preceding indications are fulfilled, repair takes place naturally. It may be aided and hastened somewhat in suitable cases by the use of very mildly stimulating remedies, such as weak preparations of sulphur, resorcin, ichthyol, thiol, tar, etc. In chronic cases with much thickening of the epidermis the abnormally and imperfectly keratinized horny layer must be destroyed and removed before the process of repair can begin. For this purpose salicylic acid in ointment is especially valuable. Other remedies used for the purpose are tar, sulphur, resorcin, chrysarobin, pyrogallol, etc.

Local Treatment of Different Types and Phases of Eczema. 1. **Acute and Subacute Eczema.**—In selecting remedies for use on the acutely inflamed integument it is always best to begin with one that is mild and soothing, and to make the application to a small surface only, until it can be determined that the preparation is going to operate favorably in the case at hand. So greatly do individuals differ in their response to a given remedy that it is often well to order an alternative treatment in case the first does not prove satisfactory. A remedy that induces comfort and brings relief to the patient will usually do good, while one that irritates will almost invariably do harm. One of the most important things to be remembered in the treatment of acute eczema is that the acutely inflamed skin does not tolerate pure water. The skin should be washed as little as possible, and this without soap and with soft water or with water that has been softened by the addition of borax, soda, bran, oatmeal, gelatin, or other demulcent, as outlined in the description of baths in the chapter on General Therapeutics. Hot water thus prepared and applied either as a lotion, a bath, a fomentation, or by sponging (without rubbing), is frequently grateful and alleviates the itching. If employed at all, its use should immediately be followed, as soon as the part is carefully dried, by the medicament selected for topical application, such as an oily or fatty substance, or a dusting-powder. In exceptional cases the continuous application of the cold pack may be of value, or, when it can be obtained, the continuous immersion of the inflamed surface, which has been previously covered with an ointment, in water of a constant temperature. During the acute stages cleansing of the skin can usually be accomplished best by the use of olive- or other oil. For the removal of crusts and

other accumulations a bland oil may be poured frequently over the surface with gentle inunction or be applied on lint or gauze.

Even the oils, however, are at times sources of irritation. They are made more soothing if combined with an equal part of liquor calcis to form a liniment, as in Carron oil, constituted of equal parts of linseed-oil and lime-water. For the linseed-oil, which has a tendency to dry and form a dense coating on the surface, it is frequently better to substitute olive-oil, oil of sweet almonds, cod-liver oil, palm-oil, or lard-oil, flavored very slightly with bergamot or with lavender to correct the disagreeable odor. The addition of 1 per cent. of carbolic acid makes the mixture antipruritic and mildly antiseptic. A thick emulsion may be formed by shaking together fresh lard and lime-water. In many cases the value of these dressings is greatly enhanced by surrounding the whole with oiled silk or other impermeable tissue. Such dressing should not be applied continuously for many hours at a time for fear of macerating and weakening the skin.

POULTICES.—Flaxseed, linseed, starch, or other poultices may in exceptional cases be applied for a few hours at a time to soften crusts and other accumulations on the surface. They should not be retained long enough to produce congestion and maceration of the skin.

POWDERS are useful in acute erythematous or papular eczema, in intertrigo, and occasionally in vesicular forms of the disease. Applied to a discharging surface, powders tend to form coherent crusts which retain secretions and are therefore irritating to the skin. In early stages when the discharge is slight, powders will sometimes succeed in wholly arresting the secretion. For this purpose they are of special value in mild forms of intertrigo. To prevent friction of underwear upon the skin the meshes may be filled with a fine powder. In eczema of the hands the gloves may be treated in the same way. For absorptive purposes magnesium carbonate is one of the most effective. For use on dry surfaces zinc stearate, plain or combined with boric acid, salicylic acid, thiol, acetanilid, etc., is very valuable on account of its lightness, and because it will adhere to any surface over which it is lightly rubbed with the hand. Among other excellent powders may be mentioned talcum, lycopodium, starch, rice-flour, "cimolite," bismuth subnitrate, zinc oxide, and calamin. The following formulæ are good:

R	Acid. boric.,	3ij;	8	M.
	Talc.,	3vj;	24	
	Ol. ros.,	q. s.	q. s.	
R	Acid. boric.,	3ij;	8	M.
	Zinc. stearat.,	3ij;	8	
	Talc.,	3ss;	16	
	Ol. amygdal. amar.,	q. s.	q. s.	

Anderson's powder and others containing camphor relieve pruritus better than the simpler powders, but are usually too stimulating and irritating for use in acute cases. In the preparation of dusting-powders

it is of the utmost importance that they be made impalpable by sifting them carefully through silk bolting-cloth, as they are sources of irritation when they contain gritty particles. Only the best and finest grades of zinc oxide, talcum, calamin, and other powders should be employed, as many of the coarser grades found in the market cannot be rendered fine enough for use by any means at the command of the average chemist.

LOTIONS are probably the most valuable preparations in acute and subacute eczema, and in some of the chronic forms of the disease. They are especially valuable in moist eczema, where it is necessary to protect the surface and relieve the itching, and at the same time to avoid the retention of secretions by the dressing. The chief drawback to the use of a lotion lies in the necessity of its frequent application to prevent drying. This objection may be removed partially by the addition of 2 per cent. or more of glycerin or of tragacanth-mucilage. The effect of a lotion is further prolonged by the addition of some impalpable and inert or astringent powder, such as talcum, zinc oxide, bismuth subnitrate, or calamin. The powder, temporarily held in suspension by shaking the lotion immediately before each application, is thus left as a deposit upon the skin. A similar but less uniformly diffused effect is produced by the use of a dusting-powder immediately after the application of the lotion. In moist eczemas a better method is to keep the lotion constantly applied on gauze or other material in the form of wet dressings. Great care must be exercised in the removal of such dressings after they have become dry, for fear of wounding the skin. An effective method is to put a single layer next the surface, which is removed but once or twice in twenty-four hours or only when soiled or stiffened by excretions, while a number of outer and thicker layers may be changed frequently in order to keep the dressing wet.

Lotions may be sedative, astringent, or stimulating. Many and varied formulæ are recommended, but few only of the most useful and typical are given here, together with some suggestions as to their occasional modification. One of the most useful lotions, and one that is easily procured, is the following :

R	Acid. carbolic.,	℥ij;	2/66	
	Zinc. oxid.,	℥j;	4	
	Glycerin.,	℥ij;	8	
	Aq. calcis,	q. s. ad ℥viiij;	q. s. ad 240	M.

The quantity of any one or all of the first three ingredients may be increased or diminished as desired. Where carbolic acid does not act favorably dilute hydrocyanic acid may be substituted. The zinc may be replaced partially or wholly by one of the other powders mentioned above. Tragacanth-mucilage may be used instead of glycerin, or both may be omitted and half of the lime-water be replaced by an equal quantity of elder-flower water. By the use of one or more of these suggested changes may be formed the well-known Startin's lotion and its modifications, and the several compound zinc-oxide lotions; among the most desirable are :

R	Acid. hydrocyan. dil.,	℥ss-℥ij;	2-8	M.
	Zinc. oxid., }	āā ℥j;	4	
	Calamin., }			
	Aq. calcis, }	āā ℥iv;	120	
	Aq. sambuci, }			
R	Acid. carbolic.,	℥ss-℥ij;	2-8	M.
	Bismuth. subnit.,	℥j;	4	
	Tragacanth.,	gr. xl;	2 66	
	Aq. calcis,	℥viiij;	240	

Occasionally neither carbolic acid nor hydrocyanic acid has the desired antipruritic effect, even when increased in strength to 5 per cent., or both may be contraindicated for some reason. In such cases from 1 to 3 per cent. of menthol, camphor, or chloral may be added, with sufficient alcohol to hold them in solution. With these additions the lotion becomes more or less stimulating and must be used in acute cases with great caution.

The following lead-and-opium wash is as useful as the various zinc oxide lotions, and in weeping cases with burning or hyperæsthesia is usually more acceptable.

R	Tinctur. opii,	℥ss;	15	M.
	Liquor. plumbi subacetat.			
	dilut.,	q. s. ad ℥viiij;	q. s. ad 240	

To this may be added, as in the case of the zinc oxide lotion, glycerin, boric acid to saturation, zinc oxide, or other powder to be left on the skin as a deposit, or from $\frac{1}{2}$ to 1 ounce (15. to 30.) of tincture of camphor if this is well tolerated and a more decided antipruritic effect is desired.

A saturated solution of boric acid to which has been added 2 per cent. or more of glycerin or tragacanth-mucilage is an excellent application in moist eczema, and especially in suppurating forms. A weak solution of potassium permanganate is both antiseptic and antipruritic. Black wash pure or diluted is effectual in many moist forms of eczema, as are 1 to 10 per cent. solutions of ichthyol and thiol. Excellent lotions for soothing effect are made by adding 1 to 2 drachms (4.-8.) of sodium bicarbonate or biborate to a quart (1000.) of thin oatmeal-gruel or of marshmallow-decoction. For a dry, irritable, and itching eczema, Boeck recommends the following:

R	Talc., }	āā ℥ij;	60	M.
	Amyli, }			
	Glycerin.,	℥vj;	24	
	Liq. plumb. subacet. dil.,	℥iv;	120	

This is to be diluted with 2 parts of water, and applied with cotton or a brush. This lotion is decidedly cooling, but is not indicated in moist eczema.

The COMBINED USE OF LOTIONS AND OINTMENTS will often give good results. The black wash as recommended by Duhring, White, and others is often effective in acute vesicular eczema. The part is

bathed for fifteen or twenty minutes two or three times a day with the wash, the sediment allowed to remain on the skin, and the whole covered with a piece of gauze or soft cloth on which has been spread a thick layer of zinc oxide or other simple ointment. The lead-water or the zinc oxide lotions may be used in the same way with simple ointments or pastes.

Any one of the zinc oxide lotions described above may be combined with an equal quantity of almond-, olive-, or other oil to form a LINIMENT. These combinations are especially good in acutely inflamed surfaces of considerable extent. As has been stated, they are also useful for cleansing the surface of crusts and other accumulations. To this end their action can be hastened and made more effective if an impermeable dressing be superimposed. For therapeutic purposes, however, the rubber and other impermeable dressings are rarely called for in acute eczema.

For subacute and indolent stages of eczema and for some acute cases mildly stimulating and stronger antipruritic lotions containing tar, carbolic acid, menthol, camphor, chloral, and alcohol may be used. They should be tried cautiously and diluted at first. As a rule, they give best results when applied for a few moments several times a day, the part being kept covered in the interval with an ointment or other protective dressing. The following formulæ, which may be modified to suit individual cases, are to be recommended:

R	Acid. carbolic.,	$\overline{3}$ iss- $\overline{3}$ ss;	6-15	M.
	Glycerin.,	$\overline{3}$ ij;	8	
	Menthol.,	$\overline{3}$ j- $\overline{3}$ ss;	4-15	
	Spirit. vin. rect.,	q. s.;		
	Aq. destill.,	q. s. ad $\overline{3}$ viiij;	q. s. ad 240	
R	Liq. picis alkalinus,	$\overline{3}$ ss- $\overline{3}$ ij;	2-8	M.
	Glycerin.,	$\overline{3}$ ij;	8	
	Aq. destill.,	q. s. ad $\overline{3}$ viiij;	q. s. ad 240	

Liquor carbonis detergens or Duhring's compound tincture of coal-tar (these preparations are described under Chronic Eczema) may be substituted for the liquor picis alkalinus. The fluid extract of grindelia robusta in the strength of from 1 to 2 per cent. in water is recommended by Duhring for some forms of subacute papular eczema. It should be used with caution, as it frequently irritates the skin. Hutchinson recommends the following in dry, subacute eczema:

R	Liq. plumb. subacet.,	$\overline{3}$ ss;	2	M.
	Liq. carb. detergentis,	$\overline{3}$ ss;	2	
	Aq. destill.,	q. s. ad $\overline{3}$ viiij;	q. s. ad 240	

OINTMENTS are not, as a rule, well tolerated by an acutely inflamed skin, and are commonly more useful in subacute and chronic eczema, but there are many exceptions to the rule, and occasionally even an acute vesicular eczema is best relieved by use of an ointment. In the

application of ointments care should be taken that they are properly and freshly prepared, and that the débris of one dressing is carefully removed before another application is made. Strata of any ointment, the older next the skin possibly rancid and having imprisoned beneath them pus or other products of disease are a source of positive harm. In acute, and especially in weeping, eczemas an ointment is best applied by spreading it evenly on gauze, lint, or other soft material, which can then be laid upon the part. The SALVE-MUSLINS devised by Unna furnish an excellent substitute for ointments; they are clean and effective, and in every way admirable if they can be procured fresh. They are, in this country, expensive, and as they deteriorate rapidly it is often difficult to obtain them in proper condition for use.

Among the best ointments for use on the acutely inflamed skin is the well-known diachylon ointment of Hebra. It is prepared as follows: to 14 ounces of the best olive-oil are added 1 pound of water, and the whole heated to boiling on a water-bath; 3 ounces and 6 drachms of finely powdered litharge are sifted slowly into the liquid, which is then boiled and stirred constantly until all particles of litharge have disappeared and there is formed a perfectly homogeneous mass. During the cooking water is occasionally added as required, and the whole evaporated to the desired consistence. The stirring is to be continued until the ointment is cold. While the mass is cooling 1 drop of oil of roses or of oil of lavender is added to each 2 ounces of ointment. When properly prepared the Hebra ointment is perfectly homogeneous, is of a light-yellowish color, and is of the consistency of butter. It is technically known as the "*Unguentum diachyli albi*" of Hebra. The simple ointment often becomes rancid in two or three weeks, but it may be preserved for months by the addition of 0.5 per cent. of carbolic acid or formalin.

Duhring has modified this ointment as follows: 1 part of pure dry lead oxide is rubbed down with 1 part of water, and well mixed with 8 parts of the best olive-oil. The mixture is stirred for about two hours over a water-bath near the boiling-point, and is then cooled with constant stirring until the proper consistence is obtained. The ointment has been modified by Piffard, and after him by Kaposi, in combining equal parts of lead-plaster and vaselin. It may be imitated fairly well by melting together 3 or 4 parts of olive-oil and 4 of diachylon plaster, and stirring until cool.

The Hebra ointment, though useful often in full strength and even to the exclusion of other pomades, may often be combined with others with manifest advantage. Thus, 1 or 2 drachms (4.-8.) of it may be added to the ounce (30.) of lard, cold-cream salve, or cerate, with or without the addition of another drachm or two (4.-8.) of zinc oxide ointment.

The officinal zinc oxide ointment is an acceptable preparation in many acute cases; equal parts of this and the Hebra ointment make an excellent combination. Any one of these ointments may be reduced with from one to three times its volume of lanolin, vaselin, or cold-cream salve. The following formula gives an excellent soothing and protective ointment:

R	Bismuth. oxid.,	3j;	4	
	Vaselin., }	āā 3j;	30	
	Ol. oliv., }	3iij;	12	
	Ceræ alb.,	q. s.	q. s.	M.
	Ol. ros.,			

Other bland and soothing ointments may be made by combining in various proportions cold-cream salve, lanolin, vaselin, lard, and simple cerate. The cerates are made sufficiently soft for gentle manipulation by adding 1 or 2 drachms (4.-8. to 30.) of glycerin or oil to each ounce of ointment, and they may be flavored with lavender, rosemary, or bergamont, as preferred. These simple bases may be stiffened and rendered somewhat astringent by the addition of from 10 grains to a drachm (0.60 to 4.) or more of bismuth subnitrate or subcarbonate, zinc oxide, or calamin to the ounce (30.). A very thin base may be prepared by mixing equal parts of lanolin, olive-oil, and glycerin. This is especially valuable for use on hairy surfaces. A creamy and cooling base is Unna's "refrigerant ointment," which contains lanolin, 10; lard, 20, and rose-water, from 30 to 60 parts. Any of the above bases may be medicated as desired; the most frequent addition being from 5 to 10 grains (0.30-0.60) of carbolic, boric, or salicylic acid, or a similar quantity of calomel or white precipitate to the ounce (30.) of salve. With these unguents may be named glycerole of starch, cucumber ointment, emulsion of sweet almonds, decoction of Irish moss, and Hardy's formula—2 parts of zinc oxide, 8 of glycerin, 30 of cold-cream salve, and 15 drops of tincture of benzoin.

The oleate of bismuth or of zinc is prepared by rubbing up 1 drachm (4.) of the oxide of either metal with 8 (30.) drachms of oleic acid, and allowing the mixture to stand for two hours. It is afterward heated on a water-bath, where 10 drachms (40.) of vaselin and 3 (12.) of wax are dissolved in it, and the whole stirred until cold. This ointment is especially useful when employed in papular forms of eczema. In pustular eczema ointments containing iodoform, boric acid, iodol, aristol, or euophen are indicated.

PASTES are especially valuable in subacute eczema, and are often tolerated in acute forms of the trouble better than an ointment. A thick paste is rarely indicated in moist eczema, as it prevents escape of the discharge from the surface. Pastes are more cleanly and adhesive, furnish better protection, are more drying, and require less frequent applications than ointments. They are formed by combining a simple powder with an ointment-base, and may be medicated by the addition of various remedies. The following paste recommended by Lassar may be taken as a type:

R	Amyl.,	3ij;	8	
	Zinc. oxid.,	3ij;	8	
	Vaselin.,	3ss;	15	M.

The substitution of talc for the starch in the above gives a paste with less tendency to concrete in lumps on the skin. Duhring uses boric acid in place of the starch, and thus produces a stiff and adherent paste. A very smooth and pleasant combination, and one that is also

fairly stiff and adherent, is made of equal parts of talc, zinc oxide, vaselin, and lanolin. These pastes serve as bases to which various medicaments may be added. Those most commonly used in acute and subacute eczema contain boric, salicylic, and carbolic acids, in the strength of from 1 to 5 per cent.; calomel, white precipitate, ichthyol, and thiol in similar proportions. Other remedies may be employed according to the indications. As an adherent and drying paste Duhring recommends :

R	Lanolin.,	$\overline{3}\text{ij}$;	60	M.
	Paraffin.,	$\overline{3}\text{j}$;	30	
	Ceræ alb.,	$\overline{3}\text{j}$;	4	
	Aq. destill.,	$\overline{3}\text{j}$;	30	

The lanolin, paraffin, and wax are thoroughly mixed before the water is added. A good drying and soothing paste, recommended by Morris, is made of equal parts of almond- or olive-oil, lime-water, and zinc oxide. Unna recommends a paste prepared by mixing 1 ounce of zinc oxide with 2 ounces (30.-60.) each of glycerin and mucilage. To either of these pastes may be added 1 per cent. of carbolic or salicylic acid. Other good bases are found in Elliot's bassorin-paste, or Unna's gelanthum, both of which are described in the chapter on General Therapeutics.

The GLYCOGELATINS render excellent service in all dry forms of eczema, in which simply protection is required. Certain remedies may also be incorporated, such as 1 or 2 per cent. of ichthyol or thiol. A convenient formula is the following :

Or	R	Gelatin. alb.,	} āā	$\overline{3}\text{j}$;	30	M.
		Zinc. oxid.,				
		Glycerin.,		$\overline{3}\text{jss}$;	45	
		Aq. destill.,		$\overline{3}\text{ij}$;	90	
	R	Gelatin. alb.,		$\overline{3}\text{ijss}$;	10	M.
		Zinc. oxid.,		$\overline{3}\text{v}$;	20	
		Glycerin.,		$\overline{3}\text{j}$;	30	
		Aq. destill.,		$\overline{3}\text{x}$;	40	

The ingredients are mixed on a hot water-bath and when cool may be cut in pieces of convenient size for use. Before application a sufficient quantity is placed on a hot water-bath, or in a dish placed in a receptacle containing hot water, and applied with a brush. It dries somewhat slowly and it is well after two or three minutes to pat the surface with cotton or to cover it completely with gauze. By increasing the quantity of glycerin a softer and more slowly drying preparation is formed. By lessening the quantity of glycerin and increasing that of the zinc oxide or gelatin a firmer and more rapidly drying product is obtained. Though these glycogelatins serve their best purpose in the dry forms of the disease, there are few forms of eczema in which they may not at times be used with benefit. In subacute and indolent types Pick's gelatin sublimate is useful. This is prepared by mixing 30 grammes of gelatin with sufficient water to

liquefy it on a water-bath, and evaporating to 75 grammes ; 25 grammes of glycerin and 5 centigrammes of corrosive sublimate are then added. The product must be melted before applying.

In acute erythematous eczema Pick's TRAGACANTH VARNISH ("linimentum exsiccans") is a very acceptable remedy in that it is easily applied without heating, dries quickly, is clean, and distinctly cooling. It is composed of tragacanth, 5; glycerin, 2; and boiling water, 93 parts. To this may be added 1 or 2 per cent. of boric or carbolic acid, or from 2 to 5 per cent. of some simple powder, such as zinc oxide. The tragacanth must be soaked for several hours in a part of the water and thoroughly triturated before the other ingredients are added.

2. Subacute Eczema.—Attention has already been called to the fact that no sharp line can be drawn between acute, subacute, and chronic eczema, the degree of inflammation in any given case varying from time to time. Most acute cases, however, are followed by a longer or shorter period of subacute or chronic inflammation. In proportion as the disease progresses to the subacute or chronic stage the various topical medicaments employed may be changed in character so as to produce an astringent or stimulating effect upon the part. The utmost skill and prudence, however, are needed at this juncture, and changes should be made cautiously, for it is at this time that the disorder is readily awakened to renewed activity, a turn of affairs which is especially annoying to the patient, and particularly so to the practitioner if there be a suspicion (truth to tell, often too well founded) that the aggravation has been due to the treatment.

Again, many cases of eczema are subacute and indolent from the beginning, yet are liable at any time to present acute manifestations; consequently in beginning the treatment of an apparently subacute case it is well to use mild measures first, gradually changing to those stronger and more stimulating.

The treatment of subacute eczema varies from that of the acute type chiefly in demanding more stimulating remedies and those having a greater antipruritic effect. For this purpose many of the substances already recommended for acute eczema may be employed, but in increased strength. In this phase of the disorder pastes are especially valuable, as are also the glycoelatin, though occasionally lotions and powders produce the best results. On the other hand, cases occur in which ointments make the best applications. When milder measures will not succeed in a given case the stronger remedies recommended for chronic eczema should be employed.

3. Chronic Eczema.—The general principles of local treatment of chronic eczema are those of the acute form of the disease except that stronger and more stimulating remedies are used. It must be remembered that many chronic eczemas are subject to acute exacerbations, when milder and soothing treatment must be adopted for a time. Moreover, chronic eczema appears in such varied phases in different individuals, and in the same individual in successive attacks, that it is impossible to select certain formulæ and declare that these will be of benefit in a given type of the disease. It is only by a careful observation of the general principles and objects of the treatment of eczema,

discussed in the preceding pages, that the varied conditions can be successfully treated.

CLEANSING of the skin should be accomplished according to directions already given, by means of oils or liniments, though in chronic eczema more vigorous measures can frequently be employed, including the occasional use of soap and water, some densely infiltrated patches tolerating and even being benefited by a daily washing. For this purpose a good toilet-soap, or, when the skin will permit, tincture of green soap may be used. The Sarg glycerin soap is an admirable substitute for these articles when the skin is tender and where an elegant toilet-preparation can be ordered. The crusts and scales once removed, subsequent topical applications can be made as required in each case.

POWDERS are useful in chronic as in acute eczema for mechanical protection, to prevent friction between apposed skin-surfaces or between the skin and clothing. They are often of value when dusted and patted over a paste, thus making a thicker and more cleanly dressing, and one less likely than a paste to be rubbed off. The Anderson and other antipruritic powders are frequently serviceable for application during the day, when other dressings cannot well be employed on account of the patient's occupation.

LOTIONS are of less value than in acute eczema, but are often useful for temporary purposes after the skin has been unduly irritated by other dressings. Stimulating lotions or solutions are sometimes painted on the skin and allowed to dry, or are used for a few minutes each day, the surface in the intervals being covered with an ointment.

OINTMENTS are the preparations most used, especially in the dry, scaly forms of the disease, in which penetration of the remedy is desired. To serve this end, they should be gently rubbed into the surface, which is later covered with more of the same ointment spread on gauze or a soft cloth.

PASTES often answer better than ointments, especially when protection and drying of the surface are the chief objects of treatment. In combination with powders as described above, they furnish convenient and effectual applications in most cases of chronic eczema. In many dry forms of the disease either plain or medicated GLYCOGELATINS form the best application. They are of special value in dispensary and other cases in which the physician does not wish to entrust the dressing to the patient, as a gelatin-dressing may often be left in place for several days or a week. For the application of tar, chrysarobin, salicylic acid, and a few other remedies to small areas, COLLODION and FLUID GUTTA-PERCHA (TRAUMATICIN) form convenient and cleanly vehicles.

Applications in chronic eczema, as a rule, should be more antipruritic and more stimulating than in acute and subacute phases of the disease. The remedies recommended above may be used in increased strength. This is especially true of the drugs classed as antipruritics, such as carbolic acid, creosote, camphor, menthol, and chloral.

One of the most useful remedies in chronic eczema is, SALICYLIC ACID. It is antipruritic and is very effective in destroying thickened

areas of dry horny epidermis. It may be incorporated in the strength of from 2 to 10 or even 20 per cent., in most of the ointments, pastes, and plasters recommended in the preceding pages. In the glyco-gelatin more than 2 or 3 per cent. cannot be used without the addition of a fat, preferably 5 per cent. of fresh lard. For small areas of infiltration with marked thickening of the horny layer salicylic acid is best used with Duhring's modifications of Pick's "salicylated soap plaster." The acid has a tendency to soften the plaster if employed in strength above 5 per cent. Duhring's formulæ are as follows :

R	Emplast. saponis (U. S. P.)		
	liquefact.,	℥iij;	90
	Olei olivæ opt.,	f ℥ij;	10
	Acid. salicylici,	℥ss;	2 M.

For a 5 per cent. plaster :

R	Emplast. saponis (U. S. P.),	℥j;	30
	Olei olivæ,	℥ xxiv;	160
	Acid. salicylici,	gr. xxiv;	160 M.

For a 10 per cent. plaster :

R	Emplast. saponis (U. S. P.)		
	liquefact.,	℥j;	30
	Acid. salicylici,	gr. xlvij;	320 M.

For a 20 per cent. plaster :

R	Emplast. plumbi (U. S. P.),	℥j;	30
	Ceræ flavæ,	gr. xlvij;	320
	Acid. salicylici,	gr. cv;	7 M.

Plasters made according to the above formulæ are adhesive, and are firm enough to be moulded and kept in rolls. For large surfaces they should be warmed before applying, to make them spread easily. Resorcin and other remedies may be substituted for salicylic acid, but resorcin has a tendency to stiffen the plaster and requires the addition of oil. Unna's salicylated gutta-percha plaster-mulls make elegant substitutes for the above, but they are expensive and not always obtainable in this country. They, moreover, deteriorate rapidly, and if not fresh are not serviceable.

TAR.—This is one of the most valuable remedies, when tolerated by the skin, for the treatment of chronic eczema. The preparations most commonly employed are *pix liquida* (pine-tar), *oleum rusci* (oil of white birch), *oleum cadinum* (oil of cade), and *terebinthina Canadensis* (balsam of fir). Oil of cade, as found in most of the shops, is inferior to *oleum rusci*. The tars are best applied in the form of ointments, but are occasionally painted over the affected surface in a liquid state with a camel's-hair brush. From $\frac{1}{2}$ to 2 drachms (2.—8.) of tar, in combination with a suitable quantity of potassium subcarbonate, are sufficient to add to 1 ounce (32.) of ointment, the proportions suggested being varied to suit the requirements of each case.

In beginning the use of tar with any individual, weak preparations should first be employed, and the strength be gradually increased until tolerance of the skin is determined, as an acute dermatitis not infrequently follows the application of stronger preparations. A convenient method is to order one jar of a fairly strong tar ointment, and another of the zinc oxide, the Hebra, or other simple salve. Before the first application the patient takes a sufficient quantity of the simple ointment in the palm of one hand and mixes with it a very small proportion of the tarry preparation. If no irritation follows this application, the amount of tar can be gradually increased with each dressing until enough is used to relieve the itching and to cause the disappearance of the infiltrated area, after which a simple paste or powder may be employed until the skin has regained its normal strength and resistance. If the application at any time causes an acute dermatitis, simpler remedies for a time must be substituted. To accomplish the best results, tar ointments should be well rubbed into the skin or liquid preparations painted on. Sometimes it is well to permit the application to accumulate until thrown off by exfoliation; but more commonly, and especially if there be signs of irritation, it is better to cleanse the skin with oil or with soap and water, according to indications, before each application.

The following formulæ are illustrations of the manner of compounding the various preparations of tar:

R	Ol. rusci (vel cadini),	3ss-3iij;	2-12	
	Potass. subcarbonat.,	ʒj-3ss;	1.33-2	
	Unguent. aq. ros.,	ʒj;	30	M.
	Ft. ungt.			

For the potassic subcarbonate $\frac{1}{2}$ to 1 drachm (2.-4.) of zinc oxide may be substituted, or from 2 to 4 grains (0.133-0.266) of red mercuric oxide, or yet $\frac{1}{2}$ scruple (0.66) of mild chloride. The vehicle, also, of such ointments may be vaselin, lanolin, simple cerate, or $\frac{1}{2}$ ounce (16.) of either in combination with an equal quantity of diachylon ointment.

Of fluid preparations may be mentioned alcoholic solutions of tar, $\frac{1}{2}$ ounce (10.) of the latter to the pint (500.) of alcohol; and in cases in which the deterative action of soap is also needed *sapo viridis* may be added as follows:

R	Picis liquidæ,	f ʒj-3ij;	30-60	
	Sapon. virid.,	f ʒjss-3iij;	45-90	
	Glycerin.,	f ʒj;	30	
	Spt. vin. rectific.,	f ʒviij;	240	
	Ol. rosmarin.,	f ʒss;	2	M.
	Sig. To be rubbed gently into the skin with a flannel rag.			

Bulkley devised an alkaline solution of tar and caustic potassa, which is especially serviceable, as it is miscible with water in all proportions, and which is constituted as follows:

R	Picis liquidæ,	f ℥ij ;	60	M.
	Potassæ causticæ,	℥j ;	30	
	Aq. destillat.,	℥v ;	150	

Dissolve the potash in the water, and add slowly to the tar in a mortar with friction.

Sig. "Liquor picis alkalinus." To be used diluted as a lotion.

Of this solution 1 drachm (4.) or more may be added to a pint (500.) of water. As an ointment, the same quantity of the solution may be added to the ounce (30.) of cold-cream salve, lanolin, or vaselin. It should be remembered, however, that the caustic alkali renders this preparation exceedingly irritating to a sensitive skin, and it should be employed with caution upon any untested surface.

An excellent fluid preparation is Duhring's "compound tincture of coal-tar," prepared according to the following formula: "Coal-tar (1 part) should be digested with tincture of quillaja (6 parts), with frequent agitation for not less than eight days, preferably for a longer period, and finally filtered. The resultant product is a brown-black tincture which, upon the addition of water, forms a cleanly yellowish emulsion, the color and certain other characters varying with the variety of coal-tar used. The strength of the tincture of quillaja should be 1 to 4 with 95 per cent. alcohol." Five to fifteen minims to the ounce of water is the strength recommended for use.

The formula recommended by Spender, and described in the chapter on General Therapeutics, is a useful means of testing the efficacy of tar upon an eczematous surface. Olive-oil or cod-liver oil may be combined with equal parts of one of the tarry preparations and rubbed into the eczematous skin. When fluid or semifluid compounds of tar are needed upon the scalp 1 drachm (4.) of the article selected may be rubbed up with an equal quantity of glycerin and added to 6 ounces of cologne-water (180.). Creolin is very similar in its action to tar and is miscible with water.

Hebra disclaimed any special value for sulphur in eczemas uncomplicated by the *acarus scabiei*, but in Wilkinson's and other ointments it serves a good purpose. The following formula supplies an ointment rather less severe than has practical efficacy in chronic eczema:

R	Picis liquid. (vel. ol. rusci),	℥iv;	120	}	M.
	Adipis,	℥j;	30		
	Ol. olivæ,	℥ss;	15		
Misce et adde:					
	Terebinth. Canadens.,	} āā ℥j;	āā 30		
	Sulphur. flor.,				
Sig. To be applied three times daily with a soft brush.					

Sig. To be applied three times daily with a soft brush.

To this formula may be added green soap if a stronger effect is desired.

Ointments and pastes containing 10 to 30 grains (0.60–2.) of sulphur, and 7 to 15 grains (0.33 to 1.) of salicylic acid in similar proportions often give good results in circumscribed, infiltrated patches of eczema which show tendencies to occasional moisture and crusting. Ointments containing from 1 to 4 per cent. of sulphur favor keratoplasia.

Ichthyol and thiol, in ointments of the strength of 10 per cent. and less, or in aqueous lotions containing from 5 to 50 per cent. of the drug, are useful in localized patches of the disease, especially of the papular and scaling varieties. Ammonium sulpho-ichthyol is preferable to the natrium compound. Its influence upon the skin seems to resemble both that of the tars and of chrysarobin. Unna's varnish containing ichthyol is convenient, as it dries rapidly and is easily removed by washing. It is prepared as follows: 40 parts of starch are mixed with 100 parts of water, to which are added 40 parts of ichthyol; after thorough trituration there are added $1\frac{1}{2}$ parts of a concentrated solution of albumin which should be prepared at a temperature low enough to prevent coagulation.

Other remedies which may be added to ointments, pastes, or plasters in strength varying from 1 to 10 per cent. for the treatment of chronic eczema are resorcin, chrysarobin, pyrogallol, calomel, and white precipitate. Occasionally systemic intoxication has followed the use of these remedies over large surfaces, and they are best adapted to employment on small areas. The three first named stain the skin and clothing. Other preparations of mercury may be employed with advantage in some cases. The use of resorcin in seborrhœal eczema is considered with that subject.

An effective method of treating circumscribed thickened patches of eczema is the following: a piece of green soap as large as a walnut is spread upon a flannel rag, and rubbed into the eczematous part for several minutes, pressing firmly the while, and from time to time dipping it into water in order to produce lather. The duration and firmness of the rubbing depend chiefly upon the amount of infiltration present, but to some extent upon the general condition of the skin. The production of an acute dermatitis by too severe treatment should be avoided. Following the soap-rubbing the part is washed free from suds with water, carefully dried, and the oil or ointment selected for topical use immediately applied on strips of muslin, which are neatly bandaged to the part. Hebra's diachylon ointment is one of the best for this purpose. The soap must be rubbed in at least twice every day, so long as any excoriated points appear after its application. Soap rubbed into the healthy skin will not be followed by such effects, the part feeling clean, smooth, and comfortable after it has been washed. The contrast this offers to the eczematous part is very striking, the latter presenting numerous intensely red, raw, and moist spots. The appearance of these red, shining, moist points after the first inunction suggests to the inexperienced eye that the malady has been aggravated; but they become fewer in number after each application, and finally disappear, the eczematous surface being then no more affected by the soft soap than is the surrounding healthy skin.

Many circumscribed patches of chronic eczema are greatly benefited by daily painting with a saturated solution of pyoktanin-blue. It is unproductive of pain in the majority of cases in which it is employed, and, as it forms a thin scale over the surface to which it is applied, probably serves a good purpose for the time being by the exclusion of air. It acts also as a parasiticide. When the effect is markedly beneficial

it leaves little to be desired in the way of local treatment. The chief objection to its employment lies in the staining it produces not only of the skin, but also of all articles brought into contact with it.

Another valuable agent in the local treatment of these varieties of eczema is formalin, a solution representing 40 per cent. of formaldehyd. It is rarely tolerated by the skin in a strength greater than from 1 to 2 per cent.

Among the more severe measures occasionally employed for small patches of eczema which resist milder treatment may be named cantharides employed as a blister, silver nitrate in crayon or in solution, from 3 to 60 grains to the ounce (0.20-4. to 30.), and iodine in combination with carbolic acid. The following formula should furnish a clear vinous-red fluid, which may be applied pure or in dilution :

R	Iodin. tinct.,	3ss;	2	
	Acid. carbolic. (cryst.),	3j;	4	
	Glycerin., }			
	Alcoholis, }	āā 3ij;	āā 8	
	Aq. destillat.,	ad f 3j;	ad 30	M.
Sig.	Iodized solution of carbolic acid.			

In cases in which there is considerable pruritus, especially in obstinate patches of papular eczema, the iodized phenol of Bellamy may be substituted for the above. The formula is :

R	Iodinii cryst., }		āā 3j;	āā 4
	Acid. carbol., }			
Combine with gentle heat and add an equal part of glycerin.				
Sig.	Iodized phenol ; to be applied twice daily with a glass rod.			

Prognosis.—Eczema is an entirely curable disease, but uncertainty attends its prognosis as regards the duration of an attack and the probability of the recurrence of a relapse. With respect to the questions most frequently asked, those relating to contagion, heredity, and persistent lesion-relics, a favorable response can be made ; but the fact remains that some forms of the disease are insignificant, some persistent, and some particularly liable to relapse from very slight provocation. Only after careful weighing of all the conditions exhibited by the skin and by the other organs can a reasonable probability as to the future of the disease be estimated. Eczema is a disease exceedingly common, and one subject to aggravation by causes well-nigh innumerable. Were the physician always in position absolutely to insure his patient a proper mode of living, and the exclusion of all sources of irritation to the skin, the prognosis would be much more satisfactory. In hospital-patients, over whom such control is more perfectly attained, the results of treatment may be predicted with some confidence.

In general, it may be said that acute eczema is more readily relieved by proper treatment than are the chronic forms of the disease ; that eczema with a discoverable cause is more manageable than one the etiology of which is obscure ; that eczema of the very young and of the very old is at times particularly rebellious ; that the non-discharging phases of the disease are rather more persistent than those accompanied

by secretion ; that eczema lingering at the mucous outlets of the body (auditory canal, nostrils, mouth, nipple, anus, vagina) is more obstinate than when it affects the skin of other parts (shoulder, neck, lumbar region) ; that eczema with constant aggravation or complications (fissure of skin of hand, varicose veins of leg, apparatus for ankylosis) is more stubborn in proportion as these complications or aggravations cannot, from the circumstances of each case, be set aside ; and, finally, that an eczema which has long existed, or has repeatedly recurred, as, for example, with every season of extremely cold or hot weather, is, after relief, very liable to return. Eczema seborrhœicum (dermatitis seborrhœica) affords brilliant results in all well-managed cases. The parasitic eczemas are also particularly amenable to treatment.

Topical and Special Varieties of Eczema.

Eczema of Children.—Inflammation of the skin in infants and young children is usually acute in type, owing to the delicate structure of the skin and to the tendency in childhood to acute rather than subacute and chronic pathological changes in the various organs of the body ; consequently the eczema of infants is commonly vesicular, pustular, or vesiculo-pustular in expression. Though acute in type, eczema of young children is frequently chronic in duration ; a child for example of two, three, or four years of age may have had the disease in varying degrees and extent since a few weeks after its birth. In these persistent cases there may be considerable thickening and infiltration of the skin, and periods during which the symptoms are those of a subacute or chronic process ; but acute manifestations recur at frequent intervals and usually predominate.

The causes peculiar to eczema of childhood are found in the ease and frequency with which the delicate skin is injured by external agents, such as soap, hard water, rough clothing, dirt, etc., together with the rubbing and scratching that follow pruritus from any cause ; in the presence of toxins in the blood, resulting from deficient elimination or from imperfect metabolism and assimilation of food, due commonly to improper or irregular feeding ; in the so-called reflex irritations arising from disorders of the alimentary tract, from dentition, and from other systemic disturbances ; and in the local infections of the skin with pus-cocci and probably at times with other micro-organisms. That local causes are responsible, at least in part, for many cases of infantile eczema may be readily inferred from the fact that the disease is commonly limited to, or most severe in, those regions (the face, scalp, neck, ears, wrists, and hands) which are not protected by the clothing. In other instances the origin of the trouble can be directly traced to the irritation produced by some rough article of clothing, or to friction and secretion retained between two skin-surfaces, as in intertrigo. Constipation, overfeeding, or an improperly constituted diet are often the direct or indirect causes of eczema. Many fat infants affected with eczema improve rapidly after a mere reduction of the carbohydrates in their food. Rickets and other forms of malnutrition furnish a skin lacking in vitality, and therefore predispose to disease. Catarrh and

other disorders of the gastro-intestinal tract are frequently accompanied by eczema, due, seemingly, to reflex irritation. In strumous children, adenopathy, furuncles, and conjunctivitis are frequent complications of eczema. Rhinitis or otorrhœa often produces a local inflammation of the skin, which may spread and persist as a pustular eczema. Seborrhœal eczema occurs as in adults, but in children is more acute, and the moist types predominate. According to statistics gathered by Crocker, more than one-third of all cases of eczema in children begin during the first year of life.

Success in the treatment of these young patients depends, first, upon the painstaking search for, and removal of, the causes; and secondly, upon the care with which the principles of treatment of acute eczema, already set forth, are carried out in all details.

Eczema of the Scalp (ECZEMA CAPITIS, ECZEMA CAPILLITII).—When the scalp is affected with eczema the symptoms differ somewhat according to the age of the patient. In adults the erythematous and squamous varieties of the disease are more common; in infants and children the pustular variety. In the former the eruption is usually circumscribed and in patches; in the latter it is more diffused. In the same proportion, also, the former is generally asymmetrically and the latter symmetrically developed.

In infants and children the pustules rupture early and their contents dry into dirty-whitish, yellowish, or greenish crusts, matting the hairs, thus serving as foci for dust-accumulation and as nests for lice, the crusts being superimposed upon a reddish, oozing, pus-covered, or occasionally indolent skin, often foul-smelling, and usually complicated by a seborrhœa. The so-called "milk-crust" is usually a compound of dried pus and altered sebum. The itching is not so intense as in some other forms of the disease. Post-cervical, pre-auricular, and occipital adenopathy are common, and in strumous children suppuration of the affected glands may occur, though this is rare. The causes of this form of disease are evidently associated with local conditions. The rapidly growing hairs of the scalp are in intimate association with the numerous and large sebaceous glands of the same part, which at times unquestionably respond by an exudative process to the physiological stimulus they feel. The acne of the young man whose beard is growing illustrates the same fact. Local irritants are not often wanting to push the disturbed equilibrium into the scale of disease. White calls attention to the common neglect in removing the "pre-natal cap of cheesy material," as well as to rude and unskilful attempts to accomplish the same end. Extremes of temperature, friction, excess, neglect, and absence of endeavor to wash the scalp, all these contribute to originate or to aggravate the disorder.

The affection when complicated or induced by lice is more common in children than in infants, doubtless in consequence of the greater independence of the former and their gregarious habits. In girls with relatively long hair the ova, or nits, of the parasite are readily distinguished, adhering closely to the hairs and accumulated especially about the occipital region. The itching is usually more annoying than in pustular eczema not thus complicated.

The erythematous and squamous forms of the disease, rather more common in adults, originate frequently in seborrhœa when scratching has been practised or irritant applications have been made. The eruption here usually occurs in asymmetrical patches, or it may be limited to a single patch tolerably well defined in outline, often upon one side of the scalp, not, as in infancy, preferring the vertex. Reference is made in the chapter on Seborrhœa to a form of eczema of the scalp occurring in adults in whom finger-nail-sized, circular, oozing or slightly crusted patches are generally disseminated over the affected surface. They result, as a rule, from the scratching of an obstinate seborrhœa in "nervous" women. The reddish friable crusts indicate traumatism, the color being due to exuded blood.

The diagnosis of these forms of disease has been already considered. The disorders most commonly confused with eczema of the scalp are psoriasis, seborrhœa, tinea favosa, and tinea tonsurans.

In the treatment of eczema of the scalp in infants and children the first indication to be met is the removal of the accumulated crusts. When this removal is harshly accomplished it becomes a fruitful source of further mischief; it is, therefore, necessary to proceed with great gentleness. The thorough softening of the crusts is all-important. For this purpose it is necessary to soak them with oil and to retain this substance in intimate contact with the scalp. Olive- or cod-liver oil may be selected, and, if needful to correct the odor or for other purpose, 1 drachm (4.) of carbolic acid may be added to each pint (512.), with 2 drachms (8.) of the balsam of Peru. A neat-fitting skull-cap, constructed of Lister protective or of flannel, should then smoothly be applied, and fastened in place by a light bandage, never by elastic-rubber bands. After several hours of soaking the crusts should be removed with warm water and spirit-of-soap washing, and the entire process be repeated until the crusts are completely detached. In selecting an article for subsequent medication of the scalp it should be remembered that even infantile eczema will proceed to a natural involution if unirritated; hence oleated lime-water, or oil of sweet almonds alone, will often answer better than an ointment, and, even where there is considerable acuity of the inflammatory process, lime-water alone, with possibly a small quantity of glycerin added, will be effective. In other cases lime-water can be medicated better with calomel or with zinc oxide. As the discharge and crusting cease ointments instead of oils and lotions may be employed. The ointment is to be gently rubbed over the surface with the tip of the finger, and the skin afterward protected with suitable dressing, such as a gauze-cap. Good ointment-bases for use on the scalp are lanolin, vaselin, equal parts of lanolin and oil, or equal parts of glycerin, lanolin, and oil. The following remedies may be incorporated in strength varying from 1 to 5 per cent.: carbolic, salicylic, and boric acids; calomel, white precipitate, ichthyol, sulphur, resorcin, and tar. In children and in acute cases strong preparations must not be used. When the seborrhœal element is at all pronounced the treatment is that of seborrhœal eczema.

It is rarely needful to cut the hair unless nits be found, though in

public charities it is a more expeditious method of arriving at the end when a nurse has to dress the heads of several children in a single ward. Lice when present may be destroyed by the application of petroleum, bichloride lotions, or alcohol. The nits are removed with alcohol or with cologne-water from hairs which it is not desirable to cut. In adults, especially in women, the hair should be spared, while the patient is warned that the loss of the growth upon the scalp may be considerable. Where an obstinate seborrhœa is followed by eczema the latter may be succeeded by alopecia; in the absence of seborrhœa the hairs are usually reproduced. It is rarely necessary to employ the skull-cap in adults, since one can succeed in insuring the necessary applications by directing the attention of the patient to the necessity of care and thoroughness.

As the disease in both classes of patients advances to a subacute or chronic stage the treatment may be made more stimulating. In the case of infants, however, stimulating topical remedies are very rarely to be employed. An eczema of the scalp that has once entered upon resolution, in an infant or a child, should generally be soothed and protected.

Many children thus affected are in excellent general health, and require no internal medication. The prevailing tendency among the laity and even among many practitioners to dose these little ones with mercury, arsenic, iodides, and other "blood medicines" cannot be condemned too severely. Frequently, however, the general health needs attention. Proper nourishment, elimination, and hygienic surroundings should be sought in every case.

The treatment of erythematous and chronic eczema of the scalp in adults is described under eczema seborrhœicum.

Eczema of the Face (ECZEMA FACIEI).—Erythematous eczema of the face in adults is projected prominently among the varieties of the disease by its uniformity of type. It occurs in early and in middle life and in advanced years, and is a particularly intractable ailment. In well-marked cases the forehead, cheeks, eyelids, and nose of the patient are involved, exhibiting an infiltrated, usually dusky-red, often symmetrical patch of disease, the affected surface being slightly elevated above the level of the sound skin. This surface is uniformly smooth and reddened; occasionally, near the root of the nose and about the lower line of the forehead minute, closely set papules are visible. Very slight oozing, especially after irritation, may be noticed. At the height of the disease, or in its involution, exceedingly fine scales form, which are scarcely perceptibly shed from the surface. The eyelids, especially the lower lids in advanced years, become puffy. The line of demarcation of the attacked surface is unusually distinct, and rarely invades the scalp-border or the region of the beard. Itching is at times intense, the patient bitterly complaining of it and usually preferring to rub the face with the hands or with pieces of cloth. Sometimes, however, the face is well scratched with the fingernails and excoriations and blood-crusts disfigure the countenance. Patients of intelligence usually describe the itching as paroxysmal and as starting at the root of the nose, whence it travels upward over the

forehead and laterally to the brows, often in the line of the supraorbital nerves. At the root of the nose the exudative process is most marked. The eruption is seen also in asymmetrically disposed patches of various sizes, with islets of sound skin between. In typical cases the hairs of the eyebrow are reduced to a stubble by constant rubbing. In resolution of the symmetrical form this condition of the eyebrows is commonly observed.

Patients thus affected are often those whose faces have especially been exposed to irritation, such as locomotive-engineers, pilots of sea-going vessels, mechanics in trades in which the hands are soiled with irritants and afterward applied to the face, and women spending hours of each day over the laundry-tub or the kitchen-stove. In each class the operation of the cause is made manifest by the exacerbation of the disease after exposure.

The affection is most commonly mistaken for erysipelas, a disorder from which it is readily differentiated by the chronicity of its course. The latter feature is particularly characteristic of this form of eczema, which is rarely completely relieved after the age of sixty within a twelve-month, and which, when it has existed for a long period of time, is particularly obstinate under the best treatment, recurring with exasperating frequency upon exposure of the face to atmospheric changes. The great vascularity, abundant supply of sensory nerves, and necessary exposure of the face explain this peculiarity. In its management the lotions and dusting-powders described under the treatment of acute eczema fulfil an important part. In some cases pastes, ointments, plasters, or the glycoelatin give better results than lotions and powders. Soothing applications should always be first employed; and more stimulating applications may be tried later. In many cases Pick's "*linimentum exsiccans*" or tragacanth-glycerin mucilage furnishes a pleasant and effective application.

In obstinate cases tar and other stimulating remedies recommended for chronic eczema should be employed. It is well to remember in the management of any case that while a tarry application may be well tolerated over one part, as, for example, on the cheeks and near the nose, in another part, as, for example, over the eyelids, a zinc-salve may better be employed in the same individual.

In patients of younger years and especially in infants the face is likely to display vesicular and pustular phases of the disease, forms more often of acute eczema, and correspondingly more manageable. The itching, and especially the burning sensations, are prone to be severe and crusts rapidly form. In infants the picture presented is often similar to that seen in the scalp, except that there are no hairs to be matted into crusts and there is often a reddish blush at the edge of the patch or where the crust has been removed, the redness of the oozing surface being somewhat more marked than the similar patches on the less vascular scalp. The scratching in these little patients is severe, crusts being torn off in part or wholly; blood-crusted excoriations are common. In this way the area of surface involved is clearly extended, sleep is greatly disturbed, and the irritability and fretfulness of the child bear heavily upon its general nutri-

tion. In severe cases of long standing the mental tone of the little sufferers becomes singularly perverted and their character unquestionably changed. The eczema of the cheeks and chin of infants is often largely due to irritation reflected from eruption of the teeth.

This chain of formidable symptoms well linked together will often bid defiance to the most skilled effort to impart ease to the tormented skin. In such cases the harness employed by White, of Boston, fills an important office: a skull-cap, made of firm old cotton or linen cloth, is closely fitted to the calvarium, and a mask of the same material is shaped to the face with exactly placed apertures for the eyes, nose, mouth, and ears. This mask is gathered in beneath the chin, and laps over two inches at the back of the head; it may be used only during sleep, or, in aggravated cases, also during the hours of wakefulness. A species of straight-jacket is made by passing the head of the child through a hole in the closed end of a small pillow-case, which is then drawn down over the body and arms, and the latter confined at the sides by stitching or pinning the case together between the trunk and the upper extremities. This jacket is finally secured by similar means between the thighs. When it is necessary to imprison the lower extremities they are similarly secured by pins within the pillow-case; and the outer edge of such trousers can be fastened to the bed or the cushion on which the child reclines. Of course, this treatment does not preclude the employment of the washes, ointments, etc., which are to be neatly applied next the skin beneath the "trousers" or the "jacket." The ointment or other application is thus retained in position, rest and protection from all external irritation are given to the tormented skin, and its natural tendency to repair soon brightens up the case.

For the treatment of these cases are recommended the black wash and zinc-salve treatment, the diachylon salve, Lassar paste, boric acid ointment, lead lotions, glycerole of starch, and other preparations and methods described in full in the treatment of acute eczema. These cases are often very capricious in their course, and treatment may have to be changed frequently to meet the varying conditions.

Eczema of the Lips (ECZEMA LABIORUM).—Reference has already been made to the obstinacy of eczema occurring near the mucous outlets of the body, a result due, probably, to the secretion furnished by the adjacent mucous tracts. The lips furnish an illustration alike of this pertinacity and aggravation. Their frequent motions in mastication and articulation aggravate an eczema, which is, moreover, apt to be teased by a no less frequent thrusting out of the tongue (where there is no beard) to wet the parts with mucus and saliva. Vesicular, pustular, squamous, and erythematous lesions occur at one point, or along the entire line of the lip, with frequently resulting crusts and fissures. The vermilion border of the lips commonly participates in the process. The lips become hot, and sometimes much thickened by the swelling and infiltration, their mucous faces being rarely implicated. Scarlet, dull-red, and other peculiarly purplish hues of the vermilion border become visible. The parts are more picked than scratched, though the itching at times is severe. The pustular and vesicular forms are

more common in children. The erythematous form, its reddened outline roughened by scales evenly projected beyond the vermilion border, is rather an affection of maturer years. In many cases the disease is aggravated by nasal discharges which flow over the upper lip, giving the latter an elephantiasic aspect or even the appearance of an animal's snout. In eczema of the hairy lip the symptoms and treatment are those of *eczema barbæ*.

The diagnosis is between hypogenous sycosis, herpes labialis, epithelioma, and syphilis. The first is accompanied by loosening of the hairs, caused by a vegetable parasite; the second is vesicular in lesion, brief of duration, and trivial in severity; the third is a disease of advanced years rather than of early and middle life, and is accompanied by characteristic induration and ulceration and not by itching. Syphilis is fond of the angles of the lips; in most cases, when thus limited, typical mucous patches of the mouth can be discovered. The lesions of syphilis at the angles of the mouth are seldom linear fissures, but are more often definitely outlined erosions, secreting a puriform mucus. Pustules and resulting crusts of the lips and the nose in female children are often eczematoid features due to the picking and scratching caused by lice upon the scalp.

In male patients the pipe, the cigarette, and the cigar, as well as the tobacco chewed and expectorated, may aggravate the malady. In all cases it is obstinate and calls for either emollient, stimulant, or protective applications. In eczema of the lips displaying acute and painful symptoms frequent fomentations of the part with soft rags dipped in hot mucilaginous and alkaline waters will aid in controlling the swelling and in alleviating the pain. After such bathing some soothing ointment should be applied. In chronic cases, in which stimulation is demanded, this can be effected at the time of dressing, the parts being subsequently protected by collodion or other material. Carbolic acid and silver nitrate are often needed for such dressing.

Equal parts of tincture of benzoin, alcohol, and glycerin applied frequently during the day is an excellent combination for the vermilion border. For protecting this portion of the lip cold-cream or other simple salve to which has been added enough white wax to make as stiff an ointment as can be spread with the finger, is recommended. A drachm (4.) of the compound tincture of benzoin with 5 to 20 (0.33–1.33) grains of tannin may often be added to such ointment with good results.

CHEILITIS GLANDULARIS APOSTHEMATOSA, MYXADENITIS LABIALIS.—This is a rare form of chronic inflammation of the lips which might be confused with eczema of this region, and which has been described by Volkmann,¹ Purdon,² and Duhring.³

The disease consists in a firm swelling, usually of the lower lip, the mucous glands of which are congested and exude a muco-purulent secretion, which dries and forms crusts. There are few subjective sensations, but the condition is chronic and rebellious to treatment. Duhring states that the condition is usually associated with a depressed

¹ Arch. f. path. Anat. u. Phys., Bd. 1, S. 142.

² Brit. Jour. of Derm., Jan., 1893.

³ Cutaneous Medicine, p. 403.

state of the nervous system. The treatment recommended consists in warm fomentations, simple lotions, and the occasional use of more stimulating preparations, such as alkalies and silver nitrate.

Eczema of the Nostrils (ECZEMA NARIUM).—Eczema of the nostrils is naturally often associated with a chronic coryza. Inasmuch as one of the common symptoms of hereditary syphilis is the “snuffles,” the physician should carefully exclude the possibility of such disorder in every instance when an infant with coryza exhibits an “eczema” of the nares or of the lips. The age of the little patient, an inspection of its anal region (which should never be omitted in infantile eczema), and the history of the case will throw considerable light upon this important question.

Whether occurring in the adolescent or the child, the disease may linger only upon the alæ in the pustular or the squamous form, or may block up the nares with crusts. In infants this obstruction enforces respiration with an open mouth, and the grasp of the nipple by the lips is thus interrupted either by respiratory acts or cries of agitation. The Schneiderian membrane participates in the inflammatory process and pours out its secretion upon the eczematous skin. This membrane when inspected is seen to be either raw and succulent, or in a condition analogous to that seen in pharyngitis sicca, is dry, glazed, and free from discharge. The nostrils are often thickened in consequence of infiltration or are fissured, especially at the lines of the nares, laterally and inferiorly. In severe cases, and when the lips participate in this process, the pouting, swollen, and distorted organs suggest the snout of the lower animals. Adults, as a result, frequently suffer from cocco-genous syco-sis and furunculosis.

Care should be taken to exclude syphilis in making a diagnosis, bearing in mind the fact that the pustular syphiloderm (which see) frequently selects the furrow on either side of the nostrils for its evolution.

In treating these cases all crusts should be removed and the parts carefully be protected. Picking of the nose in children should be prevented, if needful, by the “straight-jacket.” Pencillings with compound tincture of benzoin, iodized phenol, silver nitrate, or collodion often prove serviceable.

In softening crusts oil may be freely used. For this purpose the warm carbolized oil-spray of the atomizer or a glycerin-lotion answers well. After softening and removal of the crusts a simple ointment containing from 5 to 20 grains (0.33–1.33) of boric acid, or from 2 to 10 (0.13–0.66) grains of white precipitate to the ounce (30.) may be used. A weak citrine ointment is often serviceable. When the disease extends well up the nares Neumann employs bougies made by combining 2 grains (0.133) of zinc oxide with 16 grains (1.06) of cocoa-butter. Hardaway recommends equal parts of cold-cream salve and glycerole of lead subacetate.

Eczema of the Ears (ECZEMA AURIUM).—The ears are affected with eczema, both in infancy and maturer years, rather more often in women and children, the disease being limited to the whole or part of the organ, or extending backward over the post-auricular region, or downward over the ramus of the superior maxilla. The eczema may

be acute or be chronic, and commonly originates in seborrhœic eczema (which see) of the scalp or the face, but may find its origin in chronic or catarrhal discharges from the external auditory meatus; in the growth of aspergillus in the same canal; in exposure to temperature-changes, especially with high winds; in frostbite; in the irritation set up by pediculi and by the auricular rim of the frame of spectacles; in the toxic effect induced by the hook of cheap ear-rings and dyed bonnet ribbons; in the traumatism of ear-piercing; and in the habit of unnecessarily picking the ear to relieve it of wax or of trifling sensations of irritation.

The pustular and moist forms are common at the superior, inferior, and posterior boundaries of the pinna, where a linear fissure is liable to form in the line of the angle made by the auricle with the plane of the adjacent integument. The motions impressed upon the ear by handling it, or by placing the hat on the head and tying hat-strings over the ear, always tend to aggravate the disorder. Long hairs worn over the ears have a similar effect by the production of friction and the retention of heat. The lobules are likely to display the erythematous and scaly phases of eczema, becoming infiltrated, and having a deformed appearance and lurid-red color, the affection pursuing an indolent course. The lobules alone of both ears in young women may similarly be affected, and may exhibit these phenomena for consecutive years. Often the chronic inflammation lays the foundation for a keloid growth, an accident of inflammatory processes in other parts.

Sometimes the entire auricles are uniformly dark red, infiltrated, alternately weeping and scaling, and project to a noticeable extent from the side of the head in consequence of their increase in bulk. The itching is usually more annoying than severe, being accompanied by a characteristic sensation of tenseness and fulness of the part. Like the eczema which occurs at the other mucous outlets of the body, the affection in the meatus is particularly obstinate when it assumes a chronic form. Symmetry to the extent of involving both ears, though commonly to a different degree in each, is rather the rule than the exception, and is doubtless due to the simultaneous operation of effective causes.

The diagnosis is between erysipelas, seborrhœa (which occasionally occurs in the concha of the auricle), erythema simplex and multiforme, and dermatitis calorica.

The treatment should at first be soothing and protective by zinc salve or diachylon ointment or by soothing and astringent lotions; afterward it should be stimulating. A firm bandaging of the ears to the head may be required to support them, to prevent irregular pressure (of the head upon the pillow), and to retain external medicaments. In chronic cases stimulant applications are often well tolerated, and sulphur, salicylic acid, ichthyol, and tar ointments here play an important part. Treatment appropriate to the otitis externa or the aspergillus may be required. Bulkley recommends a tannin ointment, 1 drachm (4.) of tannin to the ounce (30.), deeply and thoroughly passed into the meatus on a camel's-hair brush. French authors generally advise small tampons smeared with an ointment and left in the canal. Burnett employs 2 drachms (8.) of oil of tar to 1 ounce (30.) of al-

cohol. Great benefit is derived from painting the indolent surfaces with solutions of silver nitrate. The intractable forms almost invariably affect adults, in whom there is usually a history of improvement under treatment, followed by relapse due to exposure to wind, heat, cold, or other sources of irritation. Many cases require the treatment recommended for eczema seborrhœicum.

Eczema of the Eyelids (ECZEMA PALPEBRARUM).—In eczema of the eyelids the free edges of the eyelid, or the skin over the orbital margin of the tarsal cartilage, may chiefly be affected; and these parts, both in children and adults. When the free edge of the eyelid is involved there is present a species of coccogenous sycoosis, the hair-follicles becoming inflamed and furnishing a purulent discharge which may agglutinate the eyelids. The latter are thickened and swollen, become the seat of a moderate itching, are picked rather than scratched, and exhibit minute crusts between, or glued to, the hairs. The disorder is often accompanied by a seborrhœa of the Meibomian follicles, and is described by oculists under the designation of “blepharitis” or “tinea tarsi.” Inasmuch as the facial expression is characteristic when the eyelids are thus involved, patients exhibiting this form of eczema are usually set down as “scrofulous,” though the disorder occurs in many individuals with no other sign of struma, and eczema surely is not such a sign.

Fissures occasionally form at the commissure of the eyelids. The disorder may complicate eczema of other parts of the face. In erythematous eczema faciei of adults there is usually swelling with puffiness, especially of the lower eyelid. The conjunctiva may or may not be implicated. A chronic granular condition of the eyelids is not noted as frequently as might be suggested by *a priori* reasoning.

The edges of the eyelids should carefully be cleansed with a weak alkaline solution and a soft camel's-hair brush whenever the eyelid is involved, and then as carefully be dried and anointed with cold-cream salve. In acute cases the closed eyelids may be bathed frequently with warm solutions of boric acid or of borax (1 to 2 drachms [4. to 8.] to the pint), and strips of soft lint, soaked in the same solution, or a very dilute glycerin and carbolic acid lotion may be laid over the closed lids for as long periods during the day as these remedies are comfortably tolerated. In chronic cases red mercuric oxide ointment, from 1 grain to 10 (0.066–0.66) to the ounce (30.), with or without an equal quantity of salicylic acid, is held in high esteem. Oculists, in the treatment of this affection, are fond of using an ointment of yellow mercuric oxide, 1 to 3 grains (0.066 to 0.2) to the drachm (4.). In place of these mercurials the unguentum hydrargyri nitratis, 1 part to 6 of cold-cream salve, may be applied, or resorcin 1 part to 100 of simple unguent. Epilation of the eyelashes may be necessary. Pencillings with solutions of silver nitrate in various strengths are also useful in chronic cases, but these solutions must carefully be confined to the eyelids, and not be suffered to come in contact with the conjunctiva. Excessive use of the eyes must be prohibited.

In the diagnosis care must be taken to exclude syphilis, lupus, and pediculi. Piedra of the eyelashes must not be overlooked. Instead

of the ordinary nits of the lash, there are in such cases jet-black, pin-head-sized masses of ivory-like hardness attached to the hairs.

Eczema of the Beard (ECZEMA BARBÆ).—Eczema may involve the region of the beard only, or it may exist in connection with the disease on other parts of the face.

In recent cases there is no loss of hair, but in those of long standing the hairs are thinned and fail to hide completely the reddened surface beneath, covered here and there with pustules or displaying floors of broken pustules, dried inflammatory products, yellowish and greenish scales and crusts. Beneath the crusts the surface is smooth, not lumpy as in hyphogenous sycosis. The hair-follicles are not solely involved, as in the coccogenous form of that disease, but evidently they and also the integument between them are inflamed. In chronic cases the symptoms may be those of erythematous and scaling eczema. In recent eczema the hairs are not loosened in their follicles, but in chronic cases such loosening does occur, and there is a true defluvium capillitii. The disorder is one primarily involving the skin, and secondarily the hair-follicle, extending smoothly over the surface, as smoothly as an eczema on the cheek of a woman. There is commonly a certain degree of symmetry, to the extent at least of involving the beard in different degrees on both cheeks at once, or the chin on both sides; often the symmetry is perfect. This symmetry is rare in the several sycoses of the same part.

The disease is accompanied by itching, rarely so severe as upon the smooth parts of the face, is particularly obstinate, and is extremely disfiguring. When extending into the region of the beard from other parts it is usually associated with eczema of the ears. When limited to the region of the moustache it may be connected with an eczema of the nares and a chronic nasal catarrh or be a symptom of seborrhœic eczema.

The condition is more superficial than that of hyphogenous sycosis and never shows any of the deep-seated nodules found in the latter disease. From coccogenous sycosis it is differentiated with greater difficulty, as the two conditions have many features in common. Sycosis is primarily an inflammation of the hair-follicles, a distinct folliculitis, and presents a characteristic pustule pierced by a hair at the mouth of the follicle. In this disease there are also found papules and small tubercles. Though there is a superficial inflammation of the follicle in eczema of the beard, a distinct folliculitis is not present and there are no papules or tubercles. Moreover, the skin-surface between the follicles is evenly involved in eczema, while it frequently escapes wholly or in part in sycosis. Eczema quite commonly coexists on other portions of the face, while sycosis is limited strictly to the region of the beard.

The treatment of recent cases of eczema of the beard is that of similar phases of the disease on other parts of the body, by means of the simpler lotions and ointments, but cases of long standing are exceedingly stubborn and frequently require vigorous measures. After removing crusts and other accumulations by soaking with oil and thorough washing with soap and water the beard must be wholly removed.

Clipping short the hairs of the face will not answer, though this is generally preferred by the patient as exposing to a less degree the unsightly surface beneath. Nothing short of epilation or of shaving, and repeated shaving every second day, will effect the desired result in chronic cases. As soon as the disease is reduced practically to an eczema of the non-hairy parts it improves in proportion to its distance from the mucous outlets of the body. When limited to the bearded cheeks the most obstinate cases in the course of a single month may be robbed of one-half their unsightliness. The patient should be encouraged by reminding him that usually it is but the first step which costs, each succeeding removal of the beard being accomplished with greater comfort to himself physically and mentally. After each shaving the skin should be bathed with water as hot as tolerable, and, if at night, a lotion or an ointment, or the latter after the former, may be used. The salves most useful for this purpose are sulphur, 10 to 60 grains to the ounce (0.66–4. to 30.); diachylon ointment with salicylic acid, 5 to 10 grains to the ounce (0.33–0.66 to 30.), and zinc or tar ointment. Rarely, the surface requires painting with weak solutions of silver nitrate. As the condition improves a dusting-powder will afford needed protection during the day. The shaving should be continued for months after the disease is at an end.

Eczema of the Genital Organs (ECZEMA GENITALIUM).—In eczema of the genital organs the disease is remarkable for the severity of the subjective sensations it occasions; for its tendency to persistence, recrudescence, and nocturnal exacerbation; and for the liability to the production of the sexual orgasm by the act of scratching. In men the surfaces most often involved are the anterior, the posterior, or lateral faces of the scrotum where they meet the thigh, though the surface of the penis, as also that of the pubes and the perineum, may be involved. In women the labia majora, more rarely the labia minora and vestibule of the vagina, are affected, with occasionally extension of the disease to the same contiguous parts as in men.

Eczema thus located is, as a French writer has well said, “a dry disease in a moist locality.” Vesicular and pustular forms are much rarer than the erythematous, the papular, the papulo-squamous, and the erythemato-squamous. In women the moister forms are more frequent, doubtless because of the wider mucous outlet and the more extensive mucous tract in the vicinage. The labia are then heightened in color, œdematous, agglutinated by crusts, and often torn viciously by the finger-nails. Blood-crusts excoriations are seen in most of the severe cases. An eczema intertrigo at the labio-femoral angle is common. Over the whole may be poured the normal or pathologically altered secretions from uterus or vagina. The disease, however, is sufficiently common after the menopause, when there is usually physiological atrophy of the uterus.

The typical disease in men is recognized in the thickened, reddened, perhaps slightly scaling integument of the scrotum, which may also be fissured, excoriated by the finger-nails, or covered with blood-crusts. Torn papules, even tubercles and nodose swellings may be closely packed together, exhibiting a lurid or even purplish hue. In aggravated

cases the infiltration is so great as to deform the parts, increasing the thickness and deepening the normal furrows of the scrotal integument to the grade of many times its normal dimensions, producing thus an elephantiasic appearance. In eczema of the penis also the prominent symptoms are œdema, itching, and redness with slight scaliness.

In both sexes, as before indicated, attempts to relieve the itching are often as severe and prolonged as they are ingenious. Commonly no relief is obtained until a serous sweating or weeping of the thickened tissues is induced by the friction. Inasmuch as the latter in severe cases is frequently repeated, the physical dangers are obvious.

Apart from this, however, the disorder has a marked tendency to disturb the mental tone and the general health. Shame deters many from seeking speedy relief, so that cases of long standing are often registered by the physician. Though unconnected with venereal disease of any kind, there is for many a special dread of an eczema of these parts simply because of its location. With sleep disturbed, the mind agitated, and the nervous system teased by an intolerable pruritus, one can scarcely wonder at the eloquence with which many patients describe their sufferings. It is a disease of middle life and of advanced years. It is rare to see a well-marked, obstinate case in a child.

The causes, exciting and aggravating, of eczema of the genital region are often obscure, but undoubtedly depend largely upon heat, moisture, and friction. These factors are favored—first, by the effect of gravity, the organs in question being situated, when the body is in the erect position, at the inferior apex of the double cone forming the trunk and being thus subject to the force of gravity; second, by the arrangement of the clothing in both sexes, by which heat and friction-effects are heightened; third, by uncleanness, the secretions and discharges from the adjacent mucous tracts being suffered to accumulate upon the person. The cause may lie in some disturbance of the genital organs or of the general nervous system. In some cases the disease is apparently reflex in origin.

In many eczemas of the surface, and especially those of the genital organs, the urine will be found to contain albumin or sugar, and these conditions have been supposed to lie at the root of the eczema. The diet of the eczematous patient with saccharine urine is of prime importance. In some cases, however, the eczema causes the elimination of the sugar or the albumin, and not the reverse. Sugar and albumin are known to be producible in urine by external irritants, among which are cutaneous diseases. Merely varnishing a portion of the skin has been followed by these effects. If a patient with saccharine urine and severe genital eczema can be kept in bed in the recumbent position for a few days, while any soothing application productive of comfort is continuously applied to the tender and excoriated surface, the sugar will often rapidly disappear from the urine. These renal symptoms are in part reflex, resulting from the extraordinary irritation of the nerves distributed to the involved surfaces. Many cases of extensive and severe eczema of the genital region in both sexes occur in patients in whom careful and repeated examination of the urine fails to reveal sugar,

but the practitioner is urged never to omit such examination in his treatment of a typical case.

Patients exhibiting genital eczema with glycosuria may be separable into two distinct classes. The first and commoner class includes those patients presenting such marked physical symptoms that the urine may be suspected before chemical examination. These patients are extremely fleshy men or women given to an excessive consumption of beer. In such patients the sugar decreases *pari passu* with the eczema, if the beer is withheld and the local irritation is judiciously treated. In a second and much graver class of patients, chiefly women, there is a diabetic history (often also of pulmonary tuberculosis), and the genital eczema is manifestly an epiphenomenon. These patients are rarely obese, usually the figure is that of a slender and delicate woman; there is little, if any, use of alcoholic beverages and the local eczema is trifling in features as compared with that in the class first described. In these cases, too, under the influence of an appropriate dietary and local management the genital eczema subsides, but the glycosuria persists often to a grave issue. Genital eczema occurring with glycosuria is one of a group of disorders named by French authors *DIABÉTIDES GÉNITALES*.

The diagnosis of eczema of the genital organs is between ringworm, acne, pruritus, pediculosis, the venereal disorders, and herpes progenitalis. The first-named affection may occur alone or may induce or may be grafted upon the eczema. Ringworm may be recognized by the discovery of the microsporon or trichophyton, and is clinically distinguished by the crescentic edge of the spreading patch, its convex border looking away from the genital centre. The "follicular vulvitis" of gynæcological authors is a genital acne and is manifestly limited to the glands and the periglandular tissues. The same is true of bromine and iodine acne, which may be developed in the same situation in both sexes. Genital pruritus may beget an eczema from scratching, but it is accompanied primarily by no skin-lesion. The pubic louse is visible to the eye, as are also its reddish excreta and nits. The ulcers and sclerosis of chancroid and primary syphilis are rarely accompanied by pruritus, and, though occasionally multiple, never exhibit diffuse patches of disease. Syphilodermata are recognizable by their characteristic features and the history of an infectious disease. In herpes progenitalis there are precedent burning, smarting, or neuralgic sensations, the occurrence of vesicles or groups of vesicles (lesions rare in eczema of the genitals), and frequent limitation of the disorder to the mucous surfaces or to the muco-cutaneous lip by which such surfaces are bounded. In eczema these boundaries are usually respected and the disease is much more strictly cutaneous.

The treatment is to be conducted on the general principles heretofore outlined. Sponging of the genital region with alkaline water as hot as can well be tolerated, followed by the blander lotions, oils, and ointments at night, and the use of antipruritic dusting-powders in the daytime, must not be omitted. One per cent. solutions of formalin are of value. In eczema of the scrotum a suspensory bandage lined with lint which is wet with a lotion, smeared with an ointment, or thoroughly covered with a powder, can usually be employed with advantage.

The habit of scratching must be broken up at all hazards. In chronic cases treatment by soft soap and diachylon ointment will be found useful. Caustics, solutions of mercuric chloride and other mercurials, carbolic acid, and especially the tarry compounds, are often necessary. The Lassar paste also may be used with advantage.

The following formulæ are useful in allaying the irritation of some acute and subacute cases :

R	Liniment. calcis,	f ℥iv;	120	
	Belladonn. extr.,	gr. xij;		80
	Zinci oxid.,	℥ij;	8	
	Glycerini,	f ℥ij;	8	
	Aq. calcis,	f ℥iv;	120	M.

Sig. Lotion to be applied at night after bathing the parts with hot water.

R	Liniment. calcis,	f ℥iv;	120	
	Acid. hydrocyanic. dil.,	f ℥j;	4	
	Liq. plumbi subacetat.,	f ℥ij;	8	
	Glycerini,	f ℥ij;	8	
	Aq. ros.,	ad f ℥viii;	240	M.

Sig. Cream, for application on strips of old linen.

Exceedingly obstinate eczema of the pubic region is benefited by shaving and subsequent appropriate treatment. When complicated by intertrigo the latter condition requires special relief by the interposition of soft lint spread with an ointment.

Eczema of the Anus and Anal Region (ECZEMA ANI).—Eczema of the anal region, in its etiology and characteristics, is closely allied to the same disease in the genital region. The presence of ascarides and hemorrhoids occasionally induces or aggravates the disorder; though this complication is rarer than is commonly supposed. Multitudes of men and women who suffer from piles never complain of eczema. The eczema may occur in erythematous, squamous, or papular form, in the order named; thus exhibiting here, as in the genitals, “a dry disease in a moist locality.”

The redness, infiltration, and itching may be limited to the verge of the anus, radiate from the latter in stellate lines, creep upward between the nates in the cleft, sweep forward over the perineum to the genital region, or extend laterally with intermediate intertrigo over the inner face of each thigh. Rarely the buttocks are covered with the same lesions. Fissures are likely to form about the anal orifice.

This disease is common in infancy, when want of care in the removal of the napkin is a fertile source of mischief; and also in persons in middle life and in advanced years, when it becomes particularly intractable. The itching is intense in the latter class, with frequent nocturnal exacerbation. Unfortunately the scratching is often reflex, and is practised during sleep, from which the patient is often aroused by his or her manipulations. Pollutions fully recognized, or occurring during profound sleep, or, more usually, in states of semi-consciousness, complicate certain cases; defecation becomes painful; the harassed nervous system of the sufferer is often in a deplorably wretched condition. In cases of long standing the usual congested, thickened, infiltrated,

and almost elephantiasic appearance of the skin is presented, with occasional fissures and exaggeration of the natural furrows. The part may simulate in aspect the formidable conditions discovered in passive pederasty. Excoriations are common around the anal verge.

In the treatment of these cases the use of very hot water by sponging, and the subsequent application of ointments, in some cases mild but in others stimulating, have yielded the best results. In the case of infants dusting-powders and the blander ointments are alone to be employed; in adults, especially in chronic cases, tar in some form is especially valuable. Here the Lassar paste may be applied or tincture of tar be freely painted over the surface, or there may be used one of the tarry ointments, such as the Wilkinson salve, of sufficient firmness to retain its form as an unguent when subjected to the heat of the part. Caustics, especially the silver nitrate in crayon, are useful when there are fissures. Corrosive sublimate, $\frac{1}{4}$ to $\frac{1}{2}$ of a grain (0.016–0.033) to 4 ounces (120.) of milk of almonds; Squire's glycerole of plumbic subacetate, $\frac{1}{2}$ drachm (2.) in 2 ounces (60.) of glycerin and water, or, as a substitute for the latter, soft soap and diachylon plaster, are here of special service. Almond-oil, or an ointment containing 2 to 10 per cent. of carbolic acid, often gives relief. Duhring recommends the following:

R	Sulphur. præcipitat.,	℥ij;	2/66	
	Naphtol.,	℥j;	1/33	
	Morph. acet.,	gr. ij;]	133	
	Zinci carb.,	℥j;	4	
	Ungt. aq. ros.,	℥j;	30	M.

When defecation is painful the stools should be semiliquid in order to insure non-aggravation of the local disorder, not, it need scarcely be remarked, with a view to eliminating any *materies morbi* by purgation. Small tampons of cotton may be smeared with an emollient ointment and gently be inserted for a short distance within the anus. Tincture of benzoin, 1 part to 8 of vaselin, may be used for this purpose. Kaposi recommends cocoa-butter suppositories, containing zinc oxide with belladonna or opium. When complicated by true fissure of the anus the sphincter ani must be stretched or divided, or dilated with medicated bougies. At night a cataplasm is applied. The parts are washed frequently with tepid water, and the anal tampons are smeared with cocaïne. During the day zinc oxide salve, 30 grains (2.) to the ounce (30.) of vaselin, is applied, and over this are thoroughly sprinkled equal parts of zinc oxide and bismuth subnitrate in fine powder. Collodion medicated with 1 to 3 per cent. of salicylic acid, and lotions containing 1 scruple (1.33) of silver nitrate to the ounce (30.), are of great value in many cases. Besnier recommends the use of a clyster after each bowel-movement, the fluid being retained for only a short time. Pencillings of fissures with crayon of silver nitrate are indispensable in severe cases.

Veiel prefers the cautious use of chrysarobin to tar, employing the latter either in the form of spirits or as tar-diachylon, 1 part to 20, gradually increasing in strength. Carbolic acid, 1 to 5 per cent., and

glycerin, 2 to 10 per cent., in elder-flower water or in almond-emulsion, are specially indicated in fleshy women when the disorder, as is often the case, is complicated with intertrigo.

The key to most cases of anal eczema is to be sought in the dietary. This disorder, in adults particularly, is likely to be a significant symptom of gout, and without the dietetic and medicinal treatment of that condition no local applications avail. Tobacco and alcohol are invariably to be excluded in the case of patients of this class; and blue pill, alkalies, colchicum, and salicylates are often needed. It is in these manifestations of eczema that health-resorts furnish their best results, necessitating and inviting, as they often do, an out-door life, an appropriate regimen, and an avoidance of stimulants. Even in children and infants, when there are no ascarides in the rectum or the vulva, the dietetic management of the patient should never be neglected.

Eczema of the Nipple and Breast of Women (ECZEMA MAMMÆ).
—Eczema of the mammary region is common in nursing-women either from the irritation produced by the mouth of the infant, or, more commonly, in consequence of a galactorrhœa. Eczema intertrigo is common below and between the breasts. The eczema here is vesicular, erythematous, or squamous in type, with fissures at the apex, the side, or the base of the nipple. The serous ooze from the infiltrated areas dries as usual into light-colored crusts. There are the characteristic burning and itching. The disease may occur on one or both breasts, and, especially with a galactorrhœa in the summer, may spread extensively, covering both breasts, the surface of the belly, and the intermammary region. The circumscribed forms occur also in pregnant or in unmarried women, and are to be distinguished from scabies, which in women is prone to occur upon the breast.

PAGET'S DISEASE, which in its early stages presents all the appearances of an eczema, is more fully described in this treatise among the epitheliomata; it is sufficient here to call attention to the important fact that a fairly well-defined eczematoid patch, surrounding the areola of the nipple or that organ only, with infiltration, itching, and possibly a fissure of the nipple, or a crust covering a superficial erosion, may be the sign of an epitheliomatous change already advanced either in the affected part only or deeper in the galactiferous ducts of the breast itself.

The treatment of mammary eczema is that of eczema in general. In severe cases with galactorrhœa nothing short of weaning the child and a cessation of all demands upon the breast will insure relief. Every effort should be made in milder cases to avoid this *dernier ressort*. The nipple should be thoroughly cleansed after each nursing. As a rule, hot water and soap may be used for the purpose without harm and usually with benefit. Any fissures existing should be then painted with compound tincture of benzoin, tincture of myrrh containing 1 grain of mercuric chloride to each ounce (0.06 to 30.) or weak solutions (2–15 per cent.) of silver nitrate. The whole should immediately be covered with a protective ointment or paste. The zinc oxide or diachylon ointment spread on lint serves the purpose well. Salicylated and borated pastes are sometimes preferable. Lister's borax salve often does well:

R	Acid. boracic. subtil. pulv., }	āā gr. xv; āā 1	M.
	Ceræ alb., }		
	Paraffin., }	āā 3ss; āā 2	
	Ol. amygdal., }		

In some instances stronger and more stimulating remedies are necessary. Before the child takes the breast all but the simplest preparations should be entirely removed with oil or other unirritating agent.

Fournier recommends a breast-plate of caoutchouc. When the disease is limited to the nipple and areola in nursing-women the glass-and rubber-apparatus sold in the shops may be tried in the hope of saving the nipple from mouth-contacts in nursing. Sometimes they answer admirably; often they utterly fail. Dusting-powders are valuable in mild cases, and for any intertrigo that may exist between and beneath the breasts.

Eczema of the Umbilicus (ECZEMA UMBILICI).—This local variety of the disease is briefly described in the chapter devoted to Seborrhœa. In most cases it is either induced or is aggravated by a seborrhœa fluida which gives origin to the peculiarly nauseating odor characteristic of the disease. Generally a reddish and infiltrated, more or less annular patch surrounds the umbilical depression, which may be filled with crusts. Syphilodermata, pediculosis, and scabies in women are to be carefully excluded in the diagnosis.

Liquor sodæ chlorinatæ, carbolic acid solutions, and, in chronic cases, iodized phenol will be required in its management. The dressing of the navel in the newborn infant, the improperly adjusted apparatus for retention of an umbilical hernia, and the corsets or “uterine supporters” of women, should not be permitted to occasion or aggravate the disease.

Anderson reports that in typical cases, especially of those affected with scabies, the navel is swollen and projects in the form of a small tumor.

Eczema Crurum (ECZEMA CRURALE).—Upon the legs, where the force of gravity is more potent than in other parts of the body, aggravated forms of eczema are found complicated with varicose veins and œdema, with dense infiltrations and indurations. In ancient cases the frequent elephantiasic aspect is significant, one limb being several inches larger in circumference than its fellow. The skin is covered from knee to ankle with enormous patches of eczema rubrum of an intensely angry appearance, moist and crust-covered; or is dry, glazed, and of a lurid, reddish hue; or is dry, horny, and ridged with irregular projections surmounted by scales resembling the rough bark of a tree; or, again, with or without œdema, the integument is tense, inelastic, seamed with scars of old varicose ulcers, and deeply and irregularly pigmented, a condition with some difficulty distinguished from syphilitic ulceration of the same region. At its onset eczema of these parts may assume any one of its known forms. In infants in long clothing, where the lower extremities are subjected to a higher temperature than in adults, the vesicular and pustular forms are common. The exceedingly obstinate forms of eczema of the legs, especially those complicated

with varicose veins, are, of course, chiefly encountered in middle life and in advanced years.

The diagnosis is, in general, to be established by considering the points heretofore discussed. The chief difficulty lies in distinguishing the eczema associated with ancient varicose cicatrices of the leg from syphilitic scars of the same locality that have resulted from degenerating tubercular syphilodermata or from gummata. In some cases, when no distinct history can be obtained, there will be a doubt, since the force of gravity upon the vessels, even without varicosities, produces certain common features, notably deep pigmentation, in both classes of cases. In women the sexual history is all-important, including the order of succession of abortions, miscarriages, and viable infants. In both sexes the discovery of other lesions, and especially of characteristic cicatrices elsewhere, must be attempted. It will be remembered that the syphilitic ulcer tends to the shape of a circle or a segment of a circle, and though occasionally existing as the sole lesion upon one leg, it is frequently multiple, or may involve both extremities, the pigmentation in old cases occurring chiefly at the periphery of the scar. Very extensive pigmentation about ancient cicatrices, especially disposed between irregularly defined scars, is commoner in eczematous forms, as the pigmentation due to syphilis though long-lived is yet the more ephemeral. With periosteal nodes the diagnosis is clear.

The treatment of eczema of the legs does not differ from that of eczema in general, except as regards the indications to be met relative to the support of the parts, thus counteracting the effect of gravity. In severe cases rest with the foot elevated and the leg placed in the horizontal position should be maintained, and other indications met by the use of the various liniments, lotions, and ointments already described. For those who must pursue their accustomed occupations the problem is difficult. An excellent preparation for subacute and chronic cases is found in the glycogelatins, as they furnish not only protection, but also some support. Moreover, they frequently may be left in position for a week at a time. As a rule, they are not indicated in acute cases or where there is much discharge; yet in some of these cases they are well tolerated and do good. A moderately firm paste is made by taking 30 parts each of white gelatin and zinc oxide, 40 parts of glycerin, and 90 parts of water. The method of preparation has been given in the preceding pages. From 1 to 3 per cent. of ichthyol, thiol, or salicylic acid in most cases may be added with advantage.

A dressing well adapted to the larger number of cases of eczema of the lower limbs is disinfection of the surface and the application of the Lassar paste or other well-selected unguent or paste, followed by dusting the whole area with a powder, over which may be neatly applied, if desirable, a cheesecloth bandage. Often, however, this bandage may be dispensed with, as in both sexes a woman's long stocking, made light and thin, such as is used in the summer season and always of white or undyed cotton, may be drawn over the limb. Over this stocking may be wound, for the purpose of support, either a flannel bandage cut on the bias, which can, as a rule, be applied

without especial skill by the inexpert, or in chronic cases that will tolerate it an elastic bandage, the inner white stocking being changed with each dressing. In the case of male patients it is often desirable that the man's "sock" be drawn over the long white stocking below. In this way support without compression (which is the essential point) may be secured.

Excellent results may be obtained by the use of the pure rubber bandage, applied immediately next the skin, especially in cases complicated by œdema, ulceration, and venous varicosity. The method of its application is generally familiar to the profession. The starch bandage, the plaster-of-Paris dressing over folds of Canton flannel so arranged that it may be removed at will in the manner in which it is used by some surgeons in treatment of diseases of the joints, these and other immovable dressings may accomplish even more in obstinate cases than elastic apparatus.

A favorite dressing in dry, papular, erythematous, and squamous patches of the disease is applied as follows: the parts are bathed with hot borated water for several minutes until the itching is relieved, and then are carefully and thoroughly dried. The patch is then completely covered with a dusting-powder, which, according to the indications of the case, is either emollient, astringent, or stimulating. Finely powdered tannin with French chalk, or boric acid and starch, or bismuth subnitrate, zinc, and starch may thus be used. Strips of cheesecloth are superimposed. A snug-fitting rubber or flannel bandage cut on the bias encompasses the whole. The dressing is left *in situ* as long as it is comfortable, often for two or three days, when it can be removed. In properly selected cases the itching is relieved, the infiltration is reduced, and the patch soon loses its hyperæmic aspect. Occasionally no other treatment will be required.

Eczema of the Hands and the Feet (ECZEMA MANUUM, ECZEMA PEDUM).—No more striking illustration of the significance of the etiology of eczema can be adduced than that to be discovered in the hands. With these organs man toils to earn his bread, and the eczema they display is their protest against the rude contacts which are thus necessitated. Unfortunately, in too many patients the imperative necessity of bread-winning forbids consent to the best methods of relief, viz., temporary disuse of these organs. The feet may be similarly attacked, and for similar reasons. All forms of eczema are here seen—erythematous, vesicular, papular, pustular, and squamous—involving the entire surface, or being limited to the wrists, ankles, interdigital spaces, palmar or plantar surfaces, or one or more digits of either hand or foot. The motions of the part are so free that fissures are common and often are exceedingly painful. The itching may be severe, and parts of one hand or of one foot may be extensively rubbed, torn, or abraded by the other. Vesicles are frequently encountered upon delicate portions of the skin, as over the dorsum and interdigital spaces, while in the denser palm and sole such lesions are deep seated and do not tend to spontaneous rupture, but on puncture a clear serous or a cloudy fluid may be evacuated.

PALMAR AND PLANTAR ECZEMA is commonly asymmetrical, but

may be symmetrical. The hands are more often involved than the feet. The condition is characterized by the appearance of irregular, ill-defined, more or less diffuse areas of dry, dead-whitish, or hyperæmic, indurated, and thickened integument, which may be fissured or which may produce such a tense inelasticity of the surface that the digits are semiflexed into the palm or sole.

Circumscribed patches of eczema, with fairly defined outline, reddish in color beneath crust or scale, subacute in course, and accompanied by paroxysmal itching, are of common occurrence on the dorsum and also on the palm or the sole. In the latter situation they may be traversed by one or more painful fissures, the same being true of the fingers and the toes. Upon the back of the hand these circumscribed patches are prone to pursue an indolent course, improving temporarily under appropriate treatment and becoming aggravated by every exposure to the causes by which they were first induced.

The long list of etiological factors which may here be efficient can scarcely be enumerated. The majority have already been considered in discussing the causes of eczema in general. The influence of all articles handled in the trades, occupations, and professions, as well as the action of toxicants and dyes, must be remembered. Thus, printers, bakers, and masons suffer in the hands, and the wearers of dyed stockings and coarse, ill-fitting shoes and boots suffer in the feet. These so-called "TRADE ECZEMAS" are often due wholly to local causes and disappear promptly on removal of the latter. Such conditions should properly be classed under chronic dermatitis.

In the matter of diagnosis, it should be remembered that an eczema of the hands may follow a dermatitis due to the *Rhus toxicodendron*. In these cases the disease is found usually at the same time upon the face and in the genital or mammary regions. Scabies of the hand in America is rarer than eczema manuum. In scabies the vesicles are firmer, more often unruptured, are fewer, are more isolated, and more intermingled with crusts, pustules, and even with bullæ, which latter are rare in eczema. The discovery of the parasite or its burrows and a history of contagion will aid in removing doubt. Numerous pustular lesions in young subjects are, however, according to Hebra, most commonly produced by the acarus. The occurrence of the eruption on the body elsewhere than on the hand is also to be expected in scabies, with respect to which it should be remembered that the burrow may not be visible, and that it may be wanting when the parasites are present. Psoriasis of the palms and soles is almost always accompanied by the presence in other parts of the body of patches, the typical characters of which should throw light on the local disorder. They are dry, non-discharging lesions, very rarely fissured as is eczema of the hands, have a distinct contour (which is rare in eczema), and are covered with more abundant and more lustrous scales. Eczema is less sharply outlined, and occurs in larger and more diffused areas than either psoriasis or syphilis. The scaling syphilodermata of the palms and soles occur early and late in the disease, and usually after a distinct history of infection. The lesions in syphilis are usually isolated, firm, deep infiltrations, circular in outline, with very sharp

definition, and they may be covered with dry, adherent, dirty-white scales, beneath which the brown-and-red hue of the persistent lesion can be discovered. Superficial or deep circular excavations of tissue, single or multiple, with punched or ragged edges, are visible. The eruption is rarely, like eczema, accompanied by itching or by discharge, but painful fissures may form. It occasionally affects the dorsum of the hand or the foot, favorite sites of eczema manuum, but almost invariably it has in such cases swept thither from the palm or from the sole.

In both syphilis and eczema of the hand the right organ in right-handed toilers is usually most involved, even where there is apparent symmetry of distribution of lesions.

The treatment demands, first, rest for the organs and a simultaneous discontinuance of the exciting cause. In the trades the result of the latter can usually be demonstrated by the patient, who notices the difference between the condition of the skin on Monday morning after a Sunday's rest and that which was distressing on the preceding Saturday night. When practicable, protection during labor must be secured by the use of gloves, neatly applied finger-cots, rubber-stalls, or bandages, retaining a dressing to the part of the hand or the foot that is the seat of the disease. For circumscribed, non-discharging patches on the dorsum of the hand or the foot the dressing described in connection with eczema of the extremities may be applied. When the nature of the labor performed is such as to render it impossible to secure protection of the hands or fingers in this way, something may be accomplished in a few cases by directing that the hand be frequently dipped in a protective solution or powdered during the hours of labor. Thus, printers may dust their fingers with lycopodium, and individuals compelled to retain their hands in irritating solutions can anoint these organs occasionally with an oily or fatty substance. Generally it may be said that an eczema of the hands is too frequently washed, and the ill effects of this practice are made evident not only in laundresses, but also in mothers who personally attend to the dressing of young infants. After each washing, the hands should immediately be covered with a suitable dressing, or with a simple lotion, ointment, or powder. For mild cases equal parts of tincture of benzoin, glycerin, and alcohol diluted more or less with water make a serviceable and agreeable application. For protection of the hands and for the retention of dressings the cheap white cotton gloves such as are worn by infantrymen are convenient and serviceable. They should be large enough to go on over the dressings easily and should be washed as soon as soiled. When extensively and acutely involved the hand should carefully be dressed, each finger being separately wrapped in gauze which has been soaked in a lotion or oil or has been spread with the selected ointment or paste, and the whole covered with a bandage or other dressing.

The local application must be chosen in accordance with the principles previously given for the treatment of eczema in general. In subacute and chronic types tarry compounds are very useful, and caustics more than ever needful when there are fissures. The fissures may

often with advantage be painted with compound tincture of benzoin. Protective flexile collodion plays an admirable part about the finger-nails where irritable seams and fissures form with overhanging fringes of torn and ragged epidermis, bordered with red. In painful eczemas of this region the immersion, particularly at night, of the entire hand or the foot in hot borated water may be practised, followed by careful drying and dressing with the selected application.

When the epidermis of the palm is greatly thickened it should be shampooed at night with green soap, pure or in spirit, with the aid of hot water, followed by a salicylated soap-plaster or by a salve containing white precipitate, 10 to 20 grains to the ounce (0.66–1.33 to 30.), or some preparation of tar. For intractable cases caustic potash, in the strength of 20 to 30 per cent. solutions, can be mopped well into the thickened palm and be followed by a salve application. Van Harlingen suggests:

R	Hydrarg. ammoniat.,	℥j;	1 33
	Adipis,	℥ss;	2
	Sevi benzoinat.,	℥vij;	10
	Ol. amygd. dulc.,	℥x;	66
	Vaselin.,	ad ℥vj;	ad 24 M.

A paste useful in many mild cases and one which dries rapidly is made of 10 parts each of glycerin, dextrin, and water. To this may be added from 1 to 3 per cent. of thiol or ichthyol. The ingredients are mixed on a hot water-bath and form a sort of liniment, which may be painted on the skin. Unna's litharge-glycerin-starch paste, described on a preceding page, is also a valuable and effective preparation for sub-acute cases. For chronic, sluggish eczema of the palms Duhring recommends an ointment composed of equal parts of mercurous nitrate, plumbic acetate, and zinc oxide ointments.

For the fingers and hands Unna's mull-plasters, but only if freshly imported, fill every requirement. These plasters may be cut into strips and be applied with neatness to every digit. Zinc oxide, salicylic acid, tar, and ichthyol mulls are all available for this purpose.

The condition known as CHAPPING of the hands and face is, properly speaking, a dermatitis, since it is usually dependent upon exposure to wind and weather and disappears when the cause is removed. It sometimes occurs, however, as a condition indistinguishable clinically from mild eczema of this region. In those subject to this disorder care should be taken through the changeable weather of spring and autumn not to expose the skin to cold or wind, especially if the hands have been previously immersed in water and are not perfectly dry. In many instances the trouble can be prevented by a simple oiling of the skin after each washing, or instead of oil equal parts of tincture of benzoin, glycerin, and alcohol may be used. This last preparation is not only a preventive, but it often affords relief in mild cases. Severer forms should be treated as corresponding grades of dermatitis or of eczema.

Eczema as it Affects the Nails (ECZEMA UNGUIUM).—There is nothing characteristic of eczema in its effects upon the nails. These horny plates participate in the diseases which affect their matrices, and

thus exhibit nutritional changes. There is, therefore, no eczema of the nail proper, but only an eczema of the digit by which the nail is affected. In well-marked cases, one, several, or all the nails of either hands or feet may lose their polish, or may become rough, punctate, furrowed laterally, and clubbed, or may present an appearance suggestive of worm-eaten surfaces. They lose their uniformly smooth attachment beneath and become tilted on their beds, with marked friability of their tissue. An eczematous condition of the skin at the nail-margin may be detected, where the usual redness, infiltration, and scaling, with a sensation of itching, point to the nature of the trouble. Rarely the nails are shed. The most misshapen will be succeeded by smooth and natural growths of nail-substance if the disease of the matrix be completely relieved. The treatment, therefore, is the treatment of the cutaneous disease. Care must be taken to exclude psoriasis (to be generally recognized by lesions in other regions of the body), as also ringworm and favus of the nails, which end can be reached by microscopically examining scales scraped from the nail-surface.

The finger-tips may be held in hot water for fifteen or twenty minutes at night and the nails then shampooed as vigorously as the condition will permit. A soft ointment should then be applied on lint or other material. Zinc oxide, white precipitate, salicylic acid, and tar salve will be found most effective for the larger number of cases. Often the organs may with advantage be protected during the daytime by the glycogelatin, powders, gloves, or by rubber-cots.

Universal Eczema.—In these cases patients should be treated in bed. The diet, which is of great importance, should be of unstimulating quality; but it is not to be forgotten that in a disease involving the entire surface of the body the strength is sooner or later liable to be exhausted, and a supporting dietary, even ferruginous tonics, is often required.

The local treatment is by alkaline and bran-baths, followed by lime-water-and-oil lotions, a dusting-powder, ointment, or other dressing suited to the local condition. In treating universal eczema the entire surface does not usually require the same topical agents. Often there should be cold-cream salve, freshly made, for the eyelids; a dusting-powder for the non-discharging or scaling surface; a salve or an oleated lotion for discharging surfaces of the integument; and special dressings for the extremities, the ears, the hands, etc.

Eczema of the Tropics (Prickly Heat).

(ECZEMA SOLARE, LICHEN TROPICUS, MILIARIA RUBRA, ETC.)

Under these titles has been described a number of disorders, some of which are more closely related to the forms of sudamen considered in connection with the functional derangements of the sweat-apparatus, others of which are instances of papular eczema, associated or not with profuse sweating under the influence of severe physical exertion or of high temperatures (solar heat). This disease is aggravated by all external and internal sources of irritation, including indigestion, the use of

alcoholic beverages, of opiates, of flannel and of chemically dyed garments worn next the skin, undue exertion in a heated medium, fatigue, and obesity.

Etiology.—The disease is more common in those subjected to rapid and intense fluctuations in the temperature of the atmosphere than in those long accustomed to a relatively hot climate. It is thus exceedingly common in the northern and central parts of the United States, where sudden changes in temperature are frequent and of wide range in degree. It attacks alike individuals of both sexes and all ages, being often particularly severe in the obese and in infants, whose delicate skins no less than their bowels resent sudden and severe thermal changes. It, moreover, affects equally the vigorous and the debilitated. It is unquestionably seen in the severest grade among fleshy Europeans and in Americans emigrating to tropical climates who are habitually ingesting alcoholic beverages in excess.

The disease is characterized by the occurrence of pin-point to pin-head-sized vesicles, bright-red papules, vesico-papules, or the two as coincident and commingled symptoms. The lesions are exceedingly numerous, and may in severe cases cover almost the entire so-called “non-hairy” surface of the body, though they are commonly much more limited in their diffusion. They are usually acuminate and discrete, though often thickly set together. They are of rapid occurrence, but in consequence of persistence of the cause may be slow to disappear or may repeatedly recur. The affected region is the seat of characteristic sensations of tingling, pricking, and burning. The attack may last for but a few days or be severe for a week or more.

Treatment.—The local treatment of prickly heat is, in brief, that of the corresponding stage of eczema. Unguents are generally to be avoided, as the skin rarely tolerates them, and the same may be said of plasters and very cold baths. Baths or lotions (tepid, warm, to moderately cool, as the feelings of the patient may decide to be most grateful), medicated with alkalies, bran, gelatin, or starch, will be found useful. After each application the skin is to be dried by gently pressing dry towels over the surface, not by rubbing, and is then to be thoroughly protected by a free use of one of the dusting-powders, particularly boric acid and talc, or one of the zinc stearate preparations. When large tracts of the skin are involved, and general baths have been ordered, starch in fine powder will often be found well suited for topical employment.

Lotions may also be employed, composed of lead, or of lead and opium, or black wash, or alcoholic and ethereal solutions containing camphor and glycerin in the proportions given when considering the subject of acute eczema. Modifications of oleated lime-water are serviceable in severe cases, as, for example :

R	Ol. lini,	f ʒij ;	60	
	Paraffin., }			
	Sapon. Castil., }	āā ʒij ;	āā 60	
	Ol. bergamii,	q. s. ;	q. s.	
	Aq. calcis,	ad Oj ;	ad 500	M.
Sig.	For external use.			

This preparation makes a demulcent creamy solution which often proves grateful to the skin; to it may be added zinc oxide or carbolic or dilute hydrocyanic acid, as required.

The general treatment of the patient is a matter of importance. The cause must be removed if possible. Withdrawal from the light, heat, and labor of the day, the use of unstimulating food and drink, unirritating apparel, and rest are of great importance. Saline and acidulated beverages are usually acceptable to the palate, and useful if not drunk too cold. The free use of lemonade, Vichy, Kissengen, Apollinaris, or other pure water, carbonated or aerated, is useful in aiding elimination and in supplying the fluids demanded by the cutaneous loss through evaporation.

Prognosis.—The disorder may be trivial or be severe, and may last but for a few hours or for several months. It is usually relieved without difficulty, often by domestic measures alone.

ECZEMA SEBORRHŒICUM.

(DERMATITIS SEBORRHŒICA.)

Duhring was the first observer to show that a type of inflammation of the skin, to which he gave the name *seborrhœa corporis*, was closely allied to, and usually consecutive to, *seborrhœa capitis*. Later, Unna¹ advanced the theory that a single morbid process, to which he gave the name *eczema seborrhœicum*, is responsible for a number of varied clinical manifestations which had previously been considered separate disorders. Under this title he includes *seborrhœa sicca* (or *pityriasis*) of the scalp, face, and body, some chronic circumscribed forms of *eczema*, and many cases which most observers still believe are forms of *psoriasis*.

Though Unna gives to *eczema seborrhœicum* a wider range than is accepted by the majority of dermatologists, there is little doubt that most of the phenomena he describes under this title are intimately related etiologically and pathologically. In America Elliott has furnished an excellent presentation of the subject.² In the following description the writings of both observers have been freely consulted.

Symptoms.—*Eczema seborrhœicum* almost invariably begins on the scalp and often remains limited to this region, though frequently it extends to the ears, temples, forehead, neck, and adjacent parts. The disease is not uncommon on other parts of the body where the sebaceous glands are large and abundant, as in the sternal, interscapular, inguino-scrotal, axillary, and umbilical regions. It may appear, however, on any part of the body and in rare instances is universal. The disease is extremely variable in its course and mode of extension. It may remain confined to the scalp for years and then extend to adjacent surfaces, or appear on portions of the body distant from the scalp, leaving the intervening surfaces unaffected. Such spreading of the disease may be very rapid, or so slow as to be almost inappreciable,

¹ *Monatshft. f. prakt. Derm.*, 1887; and *The Histopathology of the Diseases of the Skin*, 1894.

² *Morrow's System*, vol. iii., p. 273.

while the lesions may be numerous, extensive, and acute in type, or few, scattered, and indolent in character.

The affection varies considerably in appearance in its different phases and especially in different regions. In the scaly form, which is the most common, there may be simply a scanty or abundant formation of fine branny scales with apparently little other change from the normal, though the skin may be slightly reddened, and often has the peculiar yellowish color which is characteristic of the disease. The scales may be large and abundant, and heaped up in dry, adherent masses, simulating those sometimes seen in psoriasis, but in such cases the scales are usually somewhat fatty. Frequently there is a coexisting *seborrhœa oleosa*, with the formation of yellowish to brownish, soft, greasy, and non-adherent masses, suggesting crusts rather than scales, under which the skin is more or less reddened and the mouths of the follicles patulous.

The disease often appears in the form of oval or rounded macules and patches, or as small scale-capped papules which may remain discrete or may coalesce to form slightly elevated plaques. The macules, papules, and plaques are sharply outlined, and patches that are spreading peripherally frequently present a circinate border with a fading yellowish centre. By the coalescence of several such areas polycyclic, gyrate bands may be produced. The color of the lesions is reddish or pinkish, modified by the yellow tinge that is nearly always present. Scaling and crusting in varying degrees are usually present as in the more diffuse forms described above. The lesions may occasionally be moist over all or parts of their surfaces, but the characteristic vesicles and pustules of eczema are absent and the discharge when present is usually distinctly greasy. A transformation to the ordinary forms of moist eczema may occur in which the characters, both clinical and histological, of the original eczema *seborrhœicum* are lost. Of the varied manifestations of the disease the scaling forms are the most common, but in a given case the type may change gradually or rapidly, and multiformity of lesions is not unusual. Itching is usually slight and may be absent.

On the scalp the onset of the disorder is particularly insidious and often unnoticed until attention is attracted to it by a thinning of the hair, moderate or really annoying pruritus, and a scanty or abundant formation of scales over more or less of the scalp. In the early and mild forms the condition is practically that described under *seborrhœa sicca*. The vertex is the usual site of the affection, but the entire scalp may be involved. The scales may appear in any of the forms described above, but are usually fine, dry, grayish, and slightly greasy. The lowest layers of the scales are usually firmly attached to the underlying surface, which is commonly dry, lustreless, and pale, though it may be slightly hyperæmic. After the condition has existed for a time alopecia is noticed, while the hairs of the affected regions are dry and lustreless. The condition may persist for months or years with but slight change. In more severe forms the heavier masses of scales and crusts described above may form upon distinctly reddened or moist patches. *Seborrhœa oleosa* may complicate the process with its char-

acteristic greasy crusts and oily condition of scalp and hair. In infants and occasionally in adults an acute dermatitis may supervene, involving portions or all the scalp and usually extending to the adjacent portions of the face. The conditions known as MILK-CRUST (described under Seborrhœa) may well be considered a form of dermatitis seborrhœica. In adults circumscribed, oval or circinate, reddened, and scaling, moist or crusted patches may appear, chiefly about the temporal and parietal regions, often extending to the ears and portions of the face. Occasionally a sharply defined red band, more or less covered with scales or small crusts, may be seen at the margin of the hair, especially on the forehead and on the neck. Such bands closely resemble those of psoriasis, but usually have a more regular and even outline, much less infiltration and thickening of the skin, and lack the characteristic scales and outlying separate lesions of psoriasis.

The ears and the surfaces surrounding them are, after the scalp, more frequently involved than other parts of the body. Any of the above-described types of the disease may be seen in this region, the moist and crusting forms being quite common, especially back of the ears, where fissures frequently occur. The disorder not rarely affects to a very marked degree the lining of the external conduit of the ear, blocking it with crusts and interfering seriously with audition.

The beard, moustache, eyebrows, and pubes may present symptoms differing but slightly from those in the scalp. The disorder may linger about the verge of the moustache or other parts of the beard, showing its grease and scales even at a distance from the line of hairs, with a well-defined reddened surface beneath. The same occurs about the line of the eyebrows. Alopecia is uncommon in any of the regions except the eyebrows.

On the face the pityriasic forms are common on the nose and adjoining portions of the cheeks, the eyebrows and the region between, the eyelids and their margins, and may be exhibited on any part of the face. Loss of hair from the eyebrows and eyelids is not unusual (see Seborrhœa sicca). The more inflammatory moist and crusting types are most frequent along the junction of the alæ of the nose with the cheeks, but may involve the entire nose and other parts of the face. The macular and papular types, above described, are most common on the cheeks.

SEBORRHŒA CORPORIS, SEBORRHŒA PAPULOSA OR LICHENOÏDES (Crocker), LICHEN CIRCUMSCRIPTUS (Willan), LICHEN ANNULATUS ET SERPIGINOSUS (Wilson), FLANNEL-RASH.—Upon the trunk is frequently found Unna's "flower-leaf" or "petaloid" type of the eruption which was first described by Duhring and to which have been assigned by different authors the titles here enumerated. Its favorite sites are the sternum and interscapular region, but rarely it spreads in more extensive areas on other parts of the trunk. In a well-marked case the lesions appear in the form of sharply outlined circles or segments of circles which enlarge centrifugally, often coalescing to form patches with irregularly circinate outlines. The extreme borders, which represent the early stage of the lesions, are made up of very small red papules, usually covered with fine whitish or yellowish,

dry or fatty scales. As the border progresses the centre undergoes involution, so that from without inward the patch may display varying shades of red, brown, and yellow, while the whole surface is often the seat of a furfuraceous desquamation. Round or oval, somewhat elevated, solid lesions are frequent, and may scale slightly or be covered with yellow, greasy crusts. In less perfectly developed cases and in those modified with friction of the clothing or frequent bathing there may be simply yellowish, finely scaling patches with slightly reddened, more or less irregular borders.

The eruption also occurs upon the trunk and extremities in the form of macules, papules, and reddened patches which by coalescence of individual lesions may become quite large. These lesions may present any degree of scaling or crusting, though there is usually a narrow uncovered reddened margin. The affected areas may be dry; and in form, distribution, and general appearance closely simulate psoriasis; or they may be somewhat moist and, as a result of irritation or of excessive exudation, may undergo a transformation to a condition indistinguishable from that of eczema. In most cases the yellowish color of the lesions is conspicuous, being most marked when the eruption is fading.

In the axilla and groin the eruption often begins as an erythema intertrigo, and owing to the influence of heat, moisture, and friction in these regions secreting patches are common. From these points the disease often spreads to the adjoining surfaces, the advancing margin of the eruption always being sharply outlined and usually of circinate contour.

The dorsal surface of the hands and fingers may be involved, and also the palms, on which pea-sized and larger ill-defined scale-covered macules are irregularly distributed over the surface.

Etiology.—In his first description of eczema seborrhœicum Unna claimed for it a parasitic origin. He has described three varieties of diplococci which he found in the lesions of this disease, beside several varieties of bacilli which were occasionally present. Of these he considered a mulberry-shaped coccus, which he called the *morococcus*, of special importance, and on occasions has produced with it, by the inoculation of pure cultures, one or more vesicles, but without reproduction of a patch of true eczema seborrhœicum. He also found Melassez's flask-shaped bacillus in the scales.

Elliott¹ reports on a bacteriological study by W. H. Merrill, of fifty cases of eczema seborrhœicum. In all but two cases, on which a solution of resorcin had been freely used, bacteria of some kind were found. Merrill describes two varieties of diplococci and a bacillus, all three of which were present in thirty-one cases, while one or two of them were found in most of the remaining cases. Twelve inoculation-experiments were made, of which seven were successful; from pure cultures of the cocci typical lesions of the disease were produced, from which, in each case, the special coccus was recovered and cultivated. One of these cocci was decided to be chromogenic and the cause of the yellowish

¹ "A Preliminary Bacteriological Report on Eczema Seborrhœicum," N. Y. Med. Jour., October 26, 1895.

color characteristic of the disease. These experiments, though too few in number to be conclusive, would seem, when considered in connection with clinical evidence, to leave little doubt of the parasitic origin of the disease. The etiological value of the micro-bacillus of Unna and Sabouraud is considered in the discussion of seborrhœa. Positive evidence of the transmission of the disease from one individual to another is difficult to get, though a history of probable contagion is sometimes obtained.

Locally, heat, moisture, friction, and other forms of irritation may act as predisposing causes and favor the origin and spread of the disease. On the body it is often found in those who perspire freely and who wear woollen next the skin. On the scalp it is common in those who keep the head covered much of the time. Elliott reports that most of his cases occurred in people who lived for the most part indoors, and that the affection is unusual on those who live largely in the open air. His explanation of the greater prevalence of the disease in winter than in summer is that in the former season most people live indoors, with poorer ventilation, and bathe less than in summer.

The systemic conditions favoring the development of the disease are practically those named as predisposing causes of seborrhœa.

Pathology.—Even in the mildest grades of the affection, corresponding to the condition known as pityriasis capitis, Elliott found “slight inflammatory infiltration about the papillary vessels and the ascending branches from the subpapillary plexus, and along the hair-follicles,” while in the rete there were some vacuole-like formations and a few wandering cells. In severer grades the inflammatory infiltration extended to the subpapillary plexus, and in higher grades to the entire cutis, which was then somewhat œdematous. In the rete vacuoles were numerous and their origin could be traced to a nuclear degeneration. Many wandering cells were present, also karyokinetic figures and areas of cell-degeneration. The horny layer was thickened and easily detached from the interfollicular spaces, but densely packed in the dilated openings and necks of the follicles. The sebaceous glands were apparently normal. The coil-glands in many instances were dilated and contained cast-off epithelial cells mixed with a granular débris, while mitosis and cell-degeneration were frequently seen. Elliott found no appearance that would warrant him in believing the coil-glands to be the source of the fatty hypersecretion. Unna, on the other hand, found fat in the coil-glands, and believes them to be the source of most of the fatty secretion characteristic of the disease. He also describes an infiltration of small, free globules of fat through all parts of the cutis and rete, inside the lymph-sacs. Elliott found no evidences of such infiltration; but Ledermann announces that he has recognized it in normal epithelium.

Unna and Elliott agree in considering all stages of the process an inflammation of a catarrhal nature, the immediate cause of which is to be found in one or more specific micro-organisms.

Diagnosis.—From other forms of dermatitis and from simple eczema, eczema seborrhœicum may be distinguished by its origin on

the scalp, its oily secretion and crusts, the yellowish color and sharp outline of its lesions, its tendency to spread peripherally in circinate outlines, and by its lack of marked subjective sensations.

In some forms of the disease the diagnosis from psoriasis is difficult, but the location of the lesions on the flexor rather than on the extensor surfaces, the oily character of the scales and crusts, the yellowish color, the greasy and scaly centre of circinate lesions undergoing involution, and the general course of the eruption, will usually suffice to distinguish the disease.

Pityriasis rosea may present appearances identical with those of eczema seborrhœicum of the trunk and extremities. The lesions in the former disease, however, do not appear on the scalp, usually have ill-defined, frayed-out borders, and the enlarging rings present a dry, fawn-colored centre which is free from greasy scales. The affection, moreover, runs an acute course, rarely lasting more than six or eight weeks.

Treatment.—Sulphur, resorcin, salicylic acid, white precipitate, and other preparations of mercury are remedies most useful in the treatment of all stages of the disease. For the earlier and dry forms, stronger and more stimulating preparations may be used, together with more frequent washings of the skin, than in the acute, moist forms, which must be treated more in accordance with the principles laid down for the treatment of the corresponding stages of eczema. For the scalp and other hairy portions of the body lotions are usually better than ointments. The lotion recommended by Elliott, containing 3 to 20 per cent. of resorcin in equal parts of alcohol and water, is one of the best, and should be applied two or three times daily. For the dry forms of the disease a small amount of oil—preferably the oil of sweet almonds—to prevent the disagreeable drying effect of the lotion alone, may be added. Instead of thus combining the oil with the liquid, a thin ointment containing resorcin or sulphur may be substituted for or applied after the lotion. After soap-and-water washings, which should be used often enough to prevent accumulation of scales and crusts, an oily or fatty application is always desirable.

The most serviceable ointment in the majority of cases is one containing from 1 scruple to 2 drachms (1.33 to 8.) of sublimated or precipitated sulphur, 10 minims (0.66) of balsam of Peru, and 1 ounce (30.) of vaselin. Instead of sulphur, resorcin or white precipitate may be used. In some chronic cases with much infiltration, sulphur, resorcin, and salicylic acid may be with advantage combined in the same ointment, while in a few instances the tars, pyrogallol, or chrysarobin may succeed after the above-named preparations have failed. In acute forms, in which the symptoms are more those of an acute eczema, pastes and ointments containing salicylic or boric acid are valuable until the acute inflammatory condition has subsided, when preparations containing sulphur or resorcin should be used.

The disease is usually more amenable to treatment than eczema, though recurrences are common.

DERMATITIS REPENS.

Under this title Crocker first described an inflammatory disease of the skin (usually a consequence of injuries) spreading with a marginate border, and, as a rule, beginning over the upper extremities. Cases have since been reported by Garden and Nepveu.¹

The inflammation spreads from a traumatism, eventually producing a raw, reddish surface denuded of epidermis and oozing at several points, the serous exudate also undermining the apparently sound cuticle. The disease spreads with uninterrupted regularity, lasting for months, and in cases invading the larger part of an upper extremity. The extension is at times from coalescing reddish papules which discharge and leave thick, dirty looking crusts. There is a definite margin to the diseased patch. In cases the disease begins with the formation of blisters.

The disease has originated in cicatrices after amputation of a finger, from burns, from irritation of the feet after walking barefoot on sand, and from splinters under the nail. Crocker believes that the dermatitis results from peripheral nerve-irritation, and that there is a secondary parasitic involvement of the part. The disease seems to be an infectious dermatitis, the traumatism being simply an initial factor of the process. The parchment-like epithelium often left after healing shows that the process may be one of considerable destruction of epidermal and dermal tissues, which may result in diffuse but superficial atrophy and cicatrization. The diagnosis from eczema depends chiefly upon the recognition of the limited outline of the disease, the entire denudation of the surface, the undermined edge, and the thinned, shining epidermis left after healing. The affection is to be treated as a parasitic eczema.

Two cases of this disease were supposed to have originated in the minute traumatisms of the finger-nails occurring when farm-laborers are engaged in husking Indian corn by hand; and one well-marked case followed the amputation of a finger. An excellent illustration of the disease is given in a colored lithograph accompanying the report of a case by Stowers.²

In three cases treated by us success was obtained in one after employing locally a saturated solution of pyoktanin-blue. In another case that had resisted continued and varied treatment the lesions disappeared rapidly under application of a solution of sodium hyposulphite. Still another case yielded to applications of strong white-precipitate ointment. Crocker recommends a strong solution of potassic permanganate.

PRURIGO.

(Lat. *prurire*, to itch.)

(PRURIGO GRAVIS, PRURIGO OF HEBRA, PRURIGO FEROX.)

Prurigo is one of those terms which in the past have led to considerable confusion in the nomenclature of cutaneous disease. In England,

¹ Brit. Med. Jour., December 11, 1896.

² Brit. Jour. of Derm., 1896, vol. viii., No. 1.

chiefly, it is applied with more or less looseness to disorders accompanied by the subjective sensation of itching, such as the prurigo mitis of Willan, and the disease well recognized under the title "pruritus." Prurigo in this loose sense represents a group of disorders due either to the invasion of animal or of vegetable parasites, to disorders of internal origin, to the ingestion of drugs, or to the other causes described under Pruritus.

The title "prurigo" in this work is strictly limited to the disease to which the name was originally given by Hebra, a disorder beginning in earliest life and continuing throughout its duration. Once observed only or chiefly in Austria, it has now, in consequence of extensive immigration, been occasionally seen in America.

Symptoms.—Mild and severe forms of the disease are distinguished under the terms PRURIGO MITIS and PRURIGO FEROX, or AGRIA. Incessant care, judicious treatment, climatic influences, and the comforts of life commanded by wealth seem to determine the difference between the two. In both varieties of this affection pinhead- to rape-seed-sized, firm, whitish or reddish-white papules form, chiefly and primarily upon the extensor faces of the extremities, but from these localities gradually extending over the entire surface of the body. The itching is of the severest type.

The earliest symptoms are usually displayed in the latter portion of the first year of life, in the form of an urticarial rash, which persists and which is finally succeeded by typical papules. These papules are minute, often subepidermic, and rapidly become covered with blood-stained crusts in consequence of the induced scratching. Then ensues a long train of symptoms, including pustulation, fissures, excoriations, dense infiltrations, crusts formed of exuded serum and dried blood, œdema, diffuse dark-brown pigmentation of the skin-surface in large areas, and consequent adenopathy. Fully developed, the disease presents in general the same physiognomy in patients of different ages. The lower extremities always exhibit the severest manifestations of the disease, especially the thigh and leg as distinguished from the foot; though the trunk, the forehead, the cheeks, the neck, the arms, and the head may also be involved. Protected surfaces, such as the axillæ and the groins, except as regards adenopathy, are free from the disease. The general health of the patient manifestly suffers from the insomnia and nervous agitation induced by the state of the integument. Emaciation, malnutrition, and cachexia are common sequels. The mental and moral tone of the patient thus harassed from early childhood throughout an entire life is necessarily profoundly impaired. Insanity and suicide are reckoned among its remote consequences.

The characteristic papules first appear about the eighteenth or nineteenth month of life, the urticarial rash up to the second year producing merely whitish plaques upon the skin, commingled with excoriations and occasionally a marked degree of insomnia. The minute papules develop only later on the several regions of preference of the disease, at first appreciable only to the touch, later projecting from the surface and capped with a blood-scale from the scratching to which they have been subjected. Then are to be seen striated excoriations,

bulkier crusts, pustules, dark-brownish-hued pigmentation, and a rubbing off of the hairs, such as is often to be seen over the brows of male patients with erythematous eczema of the face. Œdema, infiltration, and axillary and inguinal adenopathy supervene, so that by the end of the second year or at the beginning of the third the picture of prurigo is complete. At such an epoch the distinguishing marks of the disease are its selection of the extensor faces of the extremities and the progression of symptoms with added severity from the arms to the legs. The natural furrows of the skin are all exaggerated. In exceptional cases the lesions are seen over the face and the dorsum of the feet. Eczematous attacks may complicate any case. As a rule, the patient presents practically the same morbid portrait after maturity and even in old age as in earlier life.

Prurigo mitis is the same as the severer form of the disease with respect to the evolution of symptoms; the only difference to be observed is in their intensity. The papules are fewer, the recrudescence rarer, the itching less intense, and the amenability to treatment more pronounced. It is to be noted of all cases that they are influenced happily by the warm weather of the summer season and by special attention to cleanliness and hygiene.

Etiology.—The disease occurs chiefly in Austria, few cases being recorded elsewhere. A patient was exhibited at the International Medical Congress in London, whom both Kaposi and Hebra recognized as affected with prurigo. Wigglesworth, Campbell, and others have reported cases in America. Prurigo is more often encountered in the male sex, is never contagious, and is never induced by lice; but, according to Hebra and Kaposi, it may be grafted upon an hereditary predisposition. “Scrofula,” tuberculosis, malnutrition, “misery,” poverty, anæmia, and filth are held to be severally favorable to its development. The disease is practically limited to the poorer classes living under wretched hygienic and social conditions. The superior resources of the poorest classes in America will long protect them from the incursion of this inveterate malady.

While typical prurigo ferox, as described by the Vienna school of authors, is of such rarity that probably less than a dozen cases have been reported in America, the opinion is gaining ground that the same disease with milder manifestations (prurigo mitis) is much more common here than has been believed. Patients with severe prurigo, treated by Hebra himself, have found their way to our clinic; they bore unmistakable symptoms of improvement after a residence in the United States, and almost every American expert has observed cases of milder type.

Pathology.—Kaposi practically admits that, striking as is the clinical portrait of this disease, its anatomical features are indistinguishable from severe forms of obstinate papular eczema, or from other forms of chronic dermatitis accompanied by hyperplasia. The microscope reveals proliferation and swelling of rete-cells, cell-infiltration and œdema of the papillæ, most marked around the vessels, and frequently dilated lymph-spaces. There is a scattered deposit of pigment in the corium, and many cutaneous muscles (erectores pilorum) are thickened and shortened.

Some authors contend that the papules are solely due to traumatism of the pruritic skin. Auspitz believes that the disease is in fact a sensori-motor neurosis without essential lesion. Riehl¹ considers it as a chronic form of urticaria. Leloir and others find the prurigo-papule invariably resulting from a cystic degeneration of rete-cells, thus forming a cavity which at first contains clear serum with the addition later of epithelial débris. The walls of the cyst later undergo keratinization.

According to Unna, the epithelial changes consist in a circumscribed growth of the mouth of the follicle and its periphery, and in areas of softening and necrobiosis of the epithelia. Most of the histological changes concern the epidermis, but the vessel-sheaths of the cutis exhibit a cellular infiltration with dilated lymph-spaces, though the blood-vessels are unchanged. The papillary body is œdematous at first; later, flattened as the slow thickening of the prickly-layer proceeds. The thickening of the epidermis is most marked in the horny layer.

Diagnosis.—Remembering the extreme rarity of prurigo in America, it is to be distinguished chiefly from the various forms of papular eczema by the location of its lesions, by the course of the disease, by the age of the patient when it is first developed, by the great extent of the eruption, and by the uniform type of its lesions. In prurigo, also, the fingers and the toes, the flexor aspects of the extremities, and the face are more or less spared. Under treatment eczema commonly yields at least in some portions of the skin, while prurigo does not.

From pruritus, prurigo is readily diagnosticated by its general physiognomy and history, by its peculiar pigmentations and infiltrations, and by the special region chiefly affected. But both diseases may complicate prurigo, especially eczema, which is then ordinarily of artificial origin. In pediculosis corporis the parasites will usually be found upon the underclothing, while the lesions induced by the finger-nails never form closely packed papules. There is something highly characteristic in the widely separated excoriations, the puncta from wounds inflicted by parasites, and the inflamed papules seen upon louse-bitten patients.

In scabies the characteristic burrows of the parasites will usually be recognized, as also vesicular and pustular lesions. Urticaria can be mistaken for prurigo only in the earlier stage of the last-named disease.

Treatment.—In Vienna, sulphur, naphtol, tar, green soap, baths, and frequent anointings with oily and fatty substances have occasionally served to ameliorate the severe symptoms of the disease. Mercury, ichthyol, salicylic acid, carbolic acid, and boric acid, and diachylon and zinc ointments may also be employed upon different portions of the skin when indicated.

The Wilkinson salve, representing a combination of tar, sulphur, and green soap, has proved of special value in many cases. Vleminckx's solution (*q. v.*), followed by hot bathing and corrosive-sublimate baths, 1 drachm (4.) of the sublimate to 30 gallons of water, has also been recommended. Internally arsenic has proved valueless,

¹ Arch. f. Derm. u. Syph., 1884.

while carbolic acid has occasionally seemed beneficial. Cod-liver oil and the ferruginous tonics with the bitters will naturally be indicated in many patients suffering from malnutrition. A generous diet and a tonic regimen are essential to the management of most cases.

Prognosis.—The disease usually persists through life. The most favorable conditions are those in which the patient is young and surrounded by circumstances which permit of provision for his needs. The disease is probably curable in the early years of life.

ACNE.

(Gr. *ἀκνὴ*, a point.)

(VARUS. *Fr.*, ACNÉ; *Ger.*, HAUTFINNE.)

Symptoms.—Acne is probably the cutaneous disease of most common occurrence, not excepting eczema. The latter affection occurs upon the face as often as upon other parts of the body, yet it is seen in persons upon the street with far less frequency than acne. Eczema, however, is more distressing in its symptoms, and for that reason physicians are more often consulted for its relief, the disease thus acquiring a statistical preponderance. Acne is more tolerable, and therefore is more tolerated and less treated, especially among the poor.

The disease chiefly occurs in the second and third decades of life, and is characterized in general by the occurrence of several and usually numerous, light-red, dull-crimson or violaceous, pinhead- to small-nut-sized, ill-defined papules, nodules, tubercles, or non-projecting indurations of the skin, often commingled with the symptoms of comedo and seborrhœa sicca. The lesions are isolated or irregularly scattered over the surface, which, however thickly studded with them, never displays a grouping or definite arrangement of the elements of the eruption. Many of the latter are both slightly painful and tender, though upon this point there is a wide range of difference in various individuals, some patients tolerating with a surprising equanimity the most extensive invasions of the disease. The inflammatory process, which manifestly involves the sebaceous glands and periglandular tissues, may result in suppuration of several adjacent follicles, as a consequence of which coalescence occurs and pea- to large-nut-sized cutaneous and subcutaneous abscesses may form. In many cases, however, the suppuration is limited to the area of the individual nodule. Every feature of the disease, from the smallest papule to the largest subcutaneous abscess, may be displayed at the same moment in an affected individual. Under circumstances of special aggravation the disease may occur in acute forms, but it is commonly chronic, the acute phases being usually accidents of the general process.

The disease occurs chiefly upon the face, but is seen also upon the neck, the back and front of the chest, the genitals, and the extremities, the palms and soles alone being excepted. It is emphatically a disease of the early puberal epoch in both sexes, though occasionally it is seen in middle and later life. In women the symptoms of the disease are usually most conspicuous at about the date of menstruation. Acne

usually lasts for years when unrelieved, during this period being subject to occasional exacerbations and remissions, but it commonly spontaneously disappears as full maturity of the body is attained. It may persist for years in a mild form with or without the occasional development of the severer grades. In severe cases in which suppuration has been extensive it leaves indelible traces of its ravages in the form of scars. The various terms used in the description of the forms of the disease refer chiefly to its external features.

Acne is a disorder which frequently is associated with mild or severe alopecia furfuracea and seborrhœa capitis, the totality of symptoms depending upon similar causes in the susceptible subject.

ACNE ARTIFICIALIS.—Various substances, either applied topically to the skin or ingested, are capable of producing acneiform lesions. Among them may be named tar, which may prove an irritant whether employed externally or internally, and far more frequently the salts of iodine and bromine after ingestion. Tar-acne occurs both among workers in tar and in those subjected to the action of this substance for the relief of other cutaneous disease. Pinhead- to pea-sized, reddish-brown papules then form, at the apex of each of which is perceptible a minute blackish punctum, produced by the lodgement of a particle of the medicament in the orifice of a sebaceous follicle. Pustular and furuncular lesions are, however, also produced, such as occur in bromic and iodic acne. In the latter disease Adamkiewicz and others have demonstrated the presence of the drug in the contents of the pustular lesions. Chrysarobin and a number of other medicinal substances are capable of exerting a like effect.

ACNE ATROPHICA and **ACNE HYPERTROPHICA** are terms employed to designate merely the lesion-relics of the disease. In acne atrophica there is complete atrophy of the gland-tissue, indicated by a minute sunken pit in the site of the former orifice. In acne hypertrophica there are, in consequence of the periglandular exudation, a thickening of the tissues about the acini, and a projection from the surface in the form of persistent, pea-sized, indurated masses.

ACNE CACHECTICORUM or **SCROFULOSORUM** includes the symptoms encountered in the subjects of struma, scorbutus, marasmus, chloro-anæmia, and tuberculosis. The lesions are more often developed on the trunk and the extremities than over the face, and are papulopustules, pinhead- to bean-sized, particularly indolent, and remarkable for their livid, purplish, lurid-red, or violaceous tint. The lesions are rarely indurated; more often they are seen as softish, pus- and blood-containing nodules, sluggish of career, and leaving minute cicatrices. Their features are due entirely to the general cachectic condition of the subjects in whom they occur. Colcott Fox describes acne scrofulosorum as it occurs in infants.¹

ACNE INDURATA.—This type of the disease is less frequently observed than several of the other forms, but it is one which possesses distinct clinical features. Induration of the base of the acne-papule may be noted in many cases of the simple form of the malady, but in others the glands seem generally to be distinguished as minute,

¹ Brit. Jour. of Derm., November, 1895.

very firm nodules, with no tendency to suppuration. The surface of the skin is often without marked change in color or heat, the individual lesions exhibiting at times an unnaturally whitish aspect. They are felt when the finger is passed over the surface as dense, often conical projections, occasionally painful, and giving to the touch a sensation suggestive of the surface of a nutmeg-grater. Comedones may often be discovered intermingled with the papules. The disease when well marked is likely to be extensive, occurring with characteristic expression among brunette, hairy male patients well advanced to the twenty-fifth year. It is often generalized over the forehead, cheeks, and chin, and the back of the neck.

ACNE PAPULOSA.—In acne papulosa the lesions are of a papular type, ranging in size from that of a millet-seed to that of a coffee-bean, whitish or reddish in color, and varying in the amount of induration at the base. They are evidently due to infiltration of the periglandular tissue, and are often commingled with pustules, papulo-pustules, and comedones. At the apex of each papule is often distinguished the blackish point characteristic of acne punctata, or a minute, greasy, yellowish-white spot, which represents the non-pigmented extremity of an inspissated sebaceous plug.

ACNE PUNCTATA.—In this variety of acne the apex of the papule exhibits the characteristic blackish punctum of the comedo about which the papule has formed.

ACNE PUSTULOSA.—This form is probably the most frequently observed of all the expressions of the disease. The lesions are apt to be commingled with papules, comedones, and intermediate phases between the functional and inflammatory disorders of the glands. The pustules almost invariably originate in previously formed papules and may be large or be small, containing merely a droplet of pure pus, or, when a true furunculosis ensues, a teaspoonful or more of pus may be mingled with blood and serum. This accumulation may be evacuated surgically or accidentally, or be absorbed, or may remain for a long period of time in a species of cyst, whence it can finally be expressed. In aggravated cases two or more of these pustulo-furuncular dépôts may coalesce, forming nut-sized abscesses, or, not rarely, may become united by fistulous tracts, through which there is free communication of the fluid contents of two or more chambers.

ACNE VULGARIS is a term applied by several authors to the composite eruption which is common to many clinical cases. Here the various lesions described above (papules, pustules, comedones, etc.) are associated, usually on the face and over the shoulders, each in several degrees of development, often in conjunction with the scars left by a prior eruption.

ACNE DISSEMINATA is a name given by some authors to acne vulgaris, the common inflammatory type of the disease above described.

ACNE KERATOSA is the *Acné cornée* of French authors. In this affection cornified masses of sebum distend and project from the orifices of the sebaceous glands, particularly over the neck, but also over the face, the trunk, the elbows, the knees, and other portions of the body. There is some doubt whether this disease should not be classed with

ichthyosis, which it unquestionably resembles, or with keratosis pilaris. By some French authors the condition is considered an early stage of keratosis (psorospermosis) follicularis.

Under this title Crocker¹ reports four cases in women in whom there appeared on the face, chiefly about the angles of the mouth, firm, painful inflammatory papules, succeeded by pustules and crusts. From the centre of these lesions could be expressed short, soft or horny plugs which were formed evidently in the sebaceous glands or hair-follicles. On removing the plug the lesions healed slowly, in many instances leaving a scar. The disease was persistent, lasting in one case for forty years.

KELOID-ACNE (DERMATITIS PAPILLARIS CAPILLITII) is a name which has been given to an inflammatory folliculitis and perifolliculitis, leaving deep hypertrophic scars, usually, in the thick epidermis over the neck and the back of the trunk, though seen also upon the scalp and face. Wisps of thick, distorted, and evidently altered hairs project here and there from the affected surface. Reddish, and even vascularized nodes, tubercles, and bridges occur at irregular intervals, interspersed with occasional acne-pustules and deep-seated, broad, even gigantic comedones. Sclerotic tissue, in brief, forms about the site of the acne-process quite like cicatricial keloid of the trunk and other situations.

ACNE PARASITICA is a term which eventually will be extended to include many of the varieties of the disease described above. Some of the pustular lesions of acne result solely from dissemination of pus-cocci over the face by the finger-nails or other means. The good results obtained by an appropriate therapy are often the fruit of a destruction of these micro-organisms.

That some of these lesions are at times infected with the bacillus tuberculosis there can be no question. Not only have tubercle-bacilli been recognized in the pustules of some forms of acne, but singular degenerative and even ulcerative results have in rare cases been produced, not solely due to the ordinary processes distinguishable in acne.

ACNE URTICATA is described by Löwenbach² as occurring on the scalp, face, and other portions of the body. The primary lesion, which is preceded by itching and burning, is a small wheal which enlarges to the size of from 6 to 12 mm. The centre then becomes paler and depressed and shows a vesicle which dries into a crust. The crust falls, leaving a small scar which in time becomes depressed and shining white. The full development of a wheal requires from four to six days. The later stages of the process suggest acne necrotica both clinically and histologically.

ULERYTHEMA ACNEIFORME is probably due in part to the toxins of a tubercular infection, and is assigned in this work to another chapter.

CONTAGIOUS ACNE (Diekerhoff and Grawitz) of horses (horse-pox) is compared by Kaposi to contagious impetigo rather than to human acne. It is characterized by an eruption of flattish, pea-sized and larger bullæ, seated on an inflammatory base, and visible over the region of the mane, the back, and the shoulders.

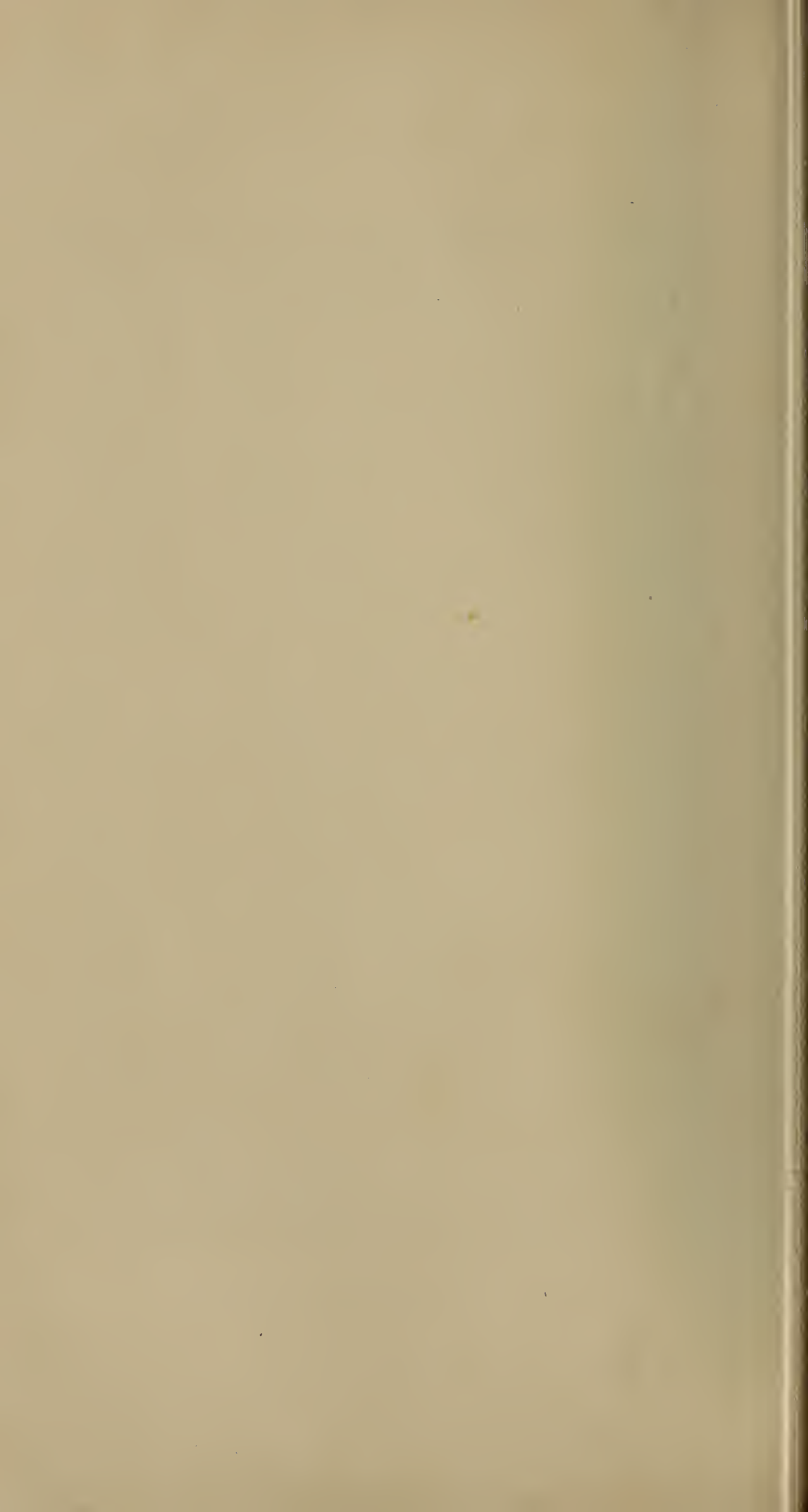
¹ Brit. Jour. of Derm., 1899, p. 1.

² Arch. f. Derm. u. Syph., 1899, vol. xlix., p. 29.

PLATE VI.



Acne-keloid of the Back.



Etiology.—The causes of acne are numerous and in many cases obscure. It is common to describe the puberal change in both sexes as a frequent cause of the disease, but a physiological crisis is rarely a disease-factor unless the full and normal development of the period be prevented by accident, disease, or malnutrition, or by excessive demands upon the vital forces in other directions. With the growth of the hair in both sexes at the period of puberty there is an unusual activity of the sebaceous glands, and this physiological is then the more readily perverted to a pathological activity. Thousands, however, escape acne who survive puberty. The disease, none the less, is prone to appear first at this time of life, and, if not improperly treated, to disappear spontaneously when full maturity of the body is attained. There is a close physiological connection between the genital function and organs, and the appendages of the skin, not only in man but also in the lower animals (antlers of the stag, plumage of birds, etc.), and the disturbances of the former may be reflected to the latter. The effect of castration upon the male of many animals is displayed in the appendages of the skin. In the same way perverted sexual instincts and habits, or a poorly regulated sexual hygiene and uterine disease, are frequently associated with an acne. The most common causes of acne are associated with disturbances of the gastro-intestinal tract, including constipation, dyspepsia, and malnutrition from various causes. Acne cachecticorum, struma, tuberculosis, and the cachexias, and the medicinal agents capable of producing artificial acne, either by ingestion or after external application, have already been accused.

It should not be concluded, however, that any one of these conditions can be recognized as efficient in the majority of patients. Many cases of acne occur in healthy young people of both sexes. A careful record of many cases of the disease will exhibit in other organs no ailment common to the larger number of patients. The causes of the disease may be local, such as suffice merely to induce primarily alteration in the consistency, quantity, or chemical character of the sebaceous secretion, and, either as a cause or result of this alteration, there ensues an adenitis or a periadenitis and subsequently an infection with micro-organisms.

The use of cosmetics, the neglect of soap, or the use of the cheaper and irritating varieties, excessive shaving on the part of the young man, friction from hatbands, "frizzes," "bangs," and dyed veils, too frequent fingering of the face, improper compression of the neck by tight collars, and a long list of other agencies may prove the immediate or the remote cause of the disease. It is believed that blondes are the more frequent sufferers; but this observation may have been suggested by the circumstance that in those of light complexion the symptoms of the disease are more conspicuous and disfiguring. It certainly seems that young brunettes, with thick skins and abundant growth of dark lanugo-hair, furnish the most obstinate cases.

The cause of acne is the mechanical irritation produced by the comedo-plug which is formed by inspissation of the contents of the gland and by hyperkeratosis of the neck of the follicle. An efficient cause in some cases is perversion of the glandular function or excretion

by the gland of toxic substances, in consequence of which the secretion is changed in character and becomes a chemical irritant to the tissues. Infection with pus-cocci or possibly with other micro-organisms is an important factor in many cases. The micro-bacillus of Unna and Sabouraud is found constantly in the lesions of acne, as it is in those of comedo and alopecia areata. It is believed by many that this bacillus is the sole direct cause of comedo and acne.

Pathology.—The earliest stage of the acne-papule is that described under comedo. Hyperplasia of the horny layer at the follicle-neck may continue without decided inflammatory changes and produce the small, firm, normal-colored papules of this type of acne indurata, or complete occlusion of the duct of the gland may result in a simple retention-cyst.

As a rule, however, the presence of the comedo-plug excites an inflammation which may be limited to the common excretory duct and the sebaceous gland, but which involves often the hair-follicles and usually the tissues surrounding these structures. The pathological changes depend upon the extent and intensity of the process. In general, however, the inflammatory changes are of one or the other of two types. In the first type the inflammation is subacute and persistent, resulting in a denser infiltration of the tissues and producing the indolent, indurated papules often seen in old and stubborn acne. The process may result in hyperplasia of the connective tissue, as in acne hypertrophica. In the second type of inflammation the process is more acute and is followed by suppuration, which may be limited to the sebaceous gland, and produce neither scarring nor loss of the hair, or may include the follicle and surrounding tissues, causing destruction of the hair-papilla and the production of a permanent scar. When several glands and the intervening tissues are involved in this suppurative inflammation small abscesses are formed, considerable tissue is destroyed, and the resulting scars are large and disfiguring.

According to Kaposi, there is no question that the first stage of the disease is always an anomalous performance of secretion or excretion in the sebaceous gland. Unna takes an opposite view, citing two main features: first, a parakeratosis resulting in occlusion of the follicular orifices, and, second, the presence in the crypt-contents of a bacillus which he believes is pathognomonic for this disease.

Diagnosis.—The typical facies of acne vulgaris is readily recognized by the characteristic features already described. The reddish papules, pustules, comedones, and "lumps" in the skin of the face of a young subject; the evident involvement of the sebaceous glands; the history of a chronic affection destitute of itching and, though possibly picked, quite unscratched; the occasional blood-crusts where lesions have been squeezed or incised, are all significant facts. The pustular syphilide of the face is not only to be differentiated by its share in the history of an infectious disease, but also by the occurrence of characteristic crusts, its selection by preference of the regions about the nose and mouth, its evolution in groups, and its sequels in the form of superficial or deep ulcerations. Nevertheless, simple acne is common in syphilitic subjects. Potassium iodide is so frequently administered

for the relief of syphilis, and in so large a majority of cases induces its artificial acne, that the latter eruption often precedes the evolution of the macular syphilide, and also with frequency masks the latter by a commingling of lesions. Simple acne is common also among those who are veterans of syphilis. Acne certainly at times resembles variola, and cases of the former have been mistaken for variola. In most instances the absence of fever and a brief delay will end any doubt.

Treatment.—Acne is an entirely remediable disease in every case properly managed. Scars of ancient ravages of the affection are, it is true, indelible, but even these are smoothed down in the progress of time so that they become yearly less conspicuous and disfiguring.

The general treatment of acne requires a careful and exhaustive study of the special requirements of each individual case. For most patients the question of diet is of the highest moment—that appropriate for the school-boy and the school-girl, or the adolescent employed in factory or on the farm or in domestic labor. All well-fed subjects of acne are benefited in a high degree by reducing the quantity of food ingested, especially in the item of meats. A milk-diet, or one composed largely of fish, fruits, and the lighter vegetables, will usually brighten up the most obstinate case. Confectionery, highly spiced food, pastry, hot bread and cakes, sugars, and fried articles are all excluded with great advantage. In most cases much will be accomplished by cutting down the quantity while regulating the quality of the food eaten. Alcohol is generally to be prohibited; and it is idle to treat a severe case of acne in a young male subject who cannot for the time abandon the use of tobacco in every form.

An important consideration, at the outset of treatment of a patient affected with acne, relates to any local or internal medication previously employed. A large proportion of all patients first claim the attention of the physician after ingesting drugs or making topical applications which have decidedly aggravated the original trouble. With or without the advice of others, such patients have often been engaged for months in swallowing potassium iodide, “red clover,” and various nostrums calculated to “drive out” the disease; or in rubbing over the skin equally noxious proprietary substances. In every such instance the skilled physician should delay active treatment of the affection until the artificial acne has subsided, and the real condition of affairs can clearly be recognized. The patient should be directed to discontinue his or her former practice, to bathe the affected part with hot water at night, and after the surface is dried to apply any bland unguent. By these simple measures alone many cases can be improved greatly, and some be relieved completely.

The constitutional treatment of acne rests for its success upon the discovery of the cause of the disease. Many patients certainly require no internal medication, being entirely relieved by local treatment. A thorough investigation of the habits of living—food, diet, bathing, occupation—and bodily functions, according to the methods described in the chapter devoted to General Diagnosis, is essential at the outset.

Since dyspepsia and constipation are frequent causes of the disease, it is necessary to correct these disorders when present. A blue pill or

calomel on several consecutive nights followed by a saline laxative in the morning is usually indicated at the outset of treatment. The cascara compounds are especially valuable when it is necessary to continue the use of a laxative for more than a few days. Some modification of Startin's acid mixture, such as the following, will be found suitable for other cases :

R	Magnes. sulphat.,	℥ij;	60	
	Acid. sulphur. dil.,	f ℥ij;	8	
	Sodii chlorid.,	℥j;	4	
	Ferri sulph.,	gr. v;		33
	Cardamom. tinct. co.,	f ℥j;	4	
	Aq. dest.,	ad f ℥viij;	ad 240	M.
	Filtra.			
	Sig. A tablespoonful in a tumblerful of water before breakfast.			

Other cathartics, saline and alterative, will often prove serviceable. The mineral waters, Hathorn, Carlsbad, Hunyadi János, Racoczy or Kissingen, a tumblerful before breakfast, are exceedingly valuable in cases of habitual intestinal torpor. When there is an acid form of dyspepsia the rhubarb and soda mixture, or potassium acetate in $\frac{1}{2}$ drachm (2.) doses, will be serviceable. Mercurous iodide in small doses three times a day is often of value in aiding elimination. Some cases improve rapidly on taking each night enough castor-oil to cause a daily free evacuation of the bowels. Salol and other intestinal antiseptics are effective in some cases.

In many cases of acne due to inactivity of the large intestine thorough irrigations of the bowel, together with daily exercises which will strengthen the abdominal muscles and stimulate peristalsis, are followed by complete recovery. Large quantities of pure water drunk between meals and before meals aid greatly in the matter of elimination. As a rule, it is advisable to take little or no liquid—especially if iced—with food, or for an hour after eating. The unwholesome habit of rapidly bolting food without proper mastication is thus largely overcome. In many instances, however, a cup of warm, but not strong, tea, cocoa, or coffee at the close of the meal is an aid to digestion.

Daily exercise in the open air is necessary to stimulate sluggish glandular systems into proper functional activity. Such exercise to be of value should be carefully adjusted, both in kind and in amount, to the needs of the individual.

A most important part of the treatment in every case is without question the daily bathing of the entire surface of the body (with exception of the face, which requires special attention as elsewhere shown; and excluding the menstrual period in women) with water as cool as can be tolerated, by rapid sponging, followed by brisk friction with coarse towels or with a flesh-brush until the skin is glowing. Common salt may be added to this bath in the strength of $\frac{1}{4}$ pound of salt to each gallon of water. The results of this treatment are excellent in the majority of cases, especially in those in which the patient has been accustomed to the hot or Turkish bath, which may aggravate affections of this class.

In nervous and overworked patients sufficient sleep at regular hours should be secured, and when possible short periods of rest during the day should be obtained. In some of these cases the indigestion and consequently the acne can be made to disappear with no other treatment than ten minutes of complete physical and mental relaxation before meals, and half an hour of comparative inactivity after eating. In a growing boy or girl relief of acne often can be best accomplished by shortening the school-hours, and by carefully selecting studies and occupation adapted to the physical and intellectual development of the individual.

The sexual life of both the married and the unmarried should be regulated according to the laws of hygiene. Uterine disease, when this complication exists, should receive proper treatment; and this, far less by topical applications than by attention to the general health, as patients of this class are often chlorotic young women with menstrual derangements, leading sedentary lives, or overworked at the school-desk, the sewing-machine, or the shop-counter.

With the recognition of the several causes of acne, general and local, internal medication for the relief of the disorder should be directed wholly to the general condition of the patient. Calcium sulphide, long highly esteemed in the management of acne, is set down to-day as "side by side with the ludicrous specimens of therapeutic empiricism." Arsenic, however, is highly recommended in acne papulosa by Duhring and Taylor. The internal employment of ergot in full doses for the relief of acne has occasionally been followed by excellent results. Cod-liver oil, iron, strychnine, phosphorus, the mineral acids, and the bitters are needed in chlorosis and cachexia. Glycerin in teaspoonful to tablespoonful doses three times daily has proved valuable (Gubler). Pepsin, pancreatin, and other aids to digestion are often of temporary value.

In all cases, whether previously treated or not, which have been purged of suspicion of an artificial element, the local treatment is of prime importance, and in the perfection with which its details are observed lies the key to success. It is not the selection of one of the several remedies of the many advocated for the relief of the disease, nor yet the successive substitution of one for another to meet any transitory indication in each case, that conduces to the happiest result; but it is rather the use of a single method of recognized value, and its skilful adaptation to the changing conditions of the disease.

An effective method of local treatment is found in curetting the lesions as practised by Fox, of New York. A ring-curette is drawn over the affected surface so as to express the contents of the lesions and to stimulate others to activity. The subsequent bleeding is encouraged by sponging with hot water. All comedones are expressed, and the subsequent treatment is that suggested below.

It is always necessary to evacuate the contents of pustules, to express from the summits of papules (where are the orifices of sebaceous ducts) all densely inspissated plugs of sebum, and to remove any comedones present with the aid of the comedo-extractor. In many cases this operative treatment, especially the removal of comedones, is easier and more

satisfactory after several days of the hot bathing and ointment-applications recommended in the following paragraphs. For the purpose of opening the superficial and smaller purulent collections the long needles used by gynæcologists are decidedly preferable to a knife, and for the larger and deeper furuncular lesions a bistoury with a delicate and very narrow blade should be used. A slight degree of skill will here repay the operator. Piffard's acne-lance is useful in this connection, as also is Volkmann's spoon (modified by Auspitz), which may be employed in removing pathological débris. By counter-depression with the fingers the whitish-yellow or blackish orifice of the duct may be detected, and at this point the needle or the bistoury should be thrust sufficiently deep to insure removal of pent-up pathological accretions. Should blood flow in droplets from any of these slight wounds, it is rather to be encouraged than repressed, as relieving the hyperæmia and engorgement of the small periglandular phlegmon. In one or several sittings all lesions requiring such interference should carefully be attacked, and immediately after each operation, preferably while pus and blood still are oozing, the part is to be bathed for several minutes with water as hot as can be borne with comfort. For many reasons the hour before retiring is preferable, though not always practicable, in treating such cases, as then a bland ointment can thoroughly be applied and be permitted to remain until the following morning.

When one or several of these operations have largely relieved the skin of its engorgement and retained inflammatory products a systematic use, at night, of the spiritus saponis alkalinus or tincture of green soap (*q. v.*) with hot water, should for a time be practised. Many cases, which do not require the minor surgical operation described above, should from the first be treated in the following manner. As the face is the commonest seat of the disease, for the purpose of description, it may be considered as the affected part:

The patient is seated before a basin of water, which is as hot as can be tolerated with comfort, and, with a pad of white flannel or a soft sponge, the face is bathed until the skin is thoroughly moistened and softened by the heated water and steam. From ten minutes to half an hour may well be employed in this way, it being a fertile source of the improvement which follows. While the face is still wet all pustules which have formed are emptied, and a sufficient quantity of spirit of green soap is poured over the flannel or the sponge, with which the face is then thoroughly scrubbed. Finally, the skin-surface is cleansed with a surplus of the water, is carefully dried, and is anointed with a sulphur ointment.

Some range may be observed in the employment of the two substances named. Thus, the spirit may be diluted with cologne- or rose-water, one-half or more; or the soaps employed, in less imperative cases, may be the best toilet-soap, Sarg's glycerin or sulphur soap. The ointment, too, may be compounded by adding from 15 grains to 2 drachms (1.-8.) of sublimed sulphur and half of the same quantity of resorcin to the ounce (30.) of lanolin, cold-cream salve, or vaselin. In the morning the face is to be washed with cold water.

This operation of steaming, soaping, and anointing is to be continued, according to the severity of the case and the tolerance of the patient, nightly, or twice a day, or on alternate nights, until the face is free from papules and other inflammatory lesions. After from two to ten days of this vigorous treatment the face is usually unsightly, reddened, slightly tumid, and often moderately furfuraceous. To the patient the skin feels tense, slightly painful, and as if made of leather. When this artificial dermatitis is severe the hot water and ointment may be employed for a few occasions without using soap. For sensitive skins it may be necessary to employ for a few days some of the sedative lotions and ointments recommended for the treatment of acute eczema. When the artificial dermatitis has subsided the shampoo may be resumed. With the removal of the lesions the spirit, or other preparation of soap, may for a time be discontinued. The improvement which follows is marked and speedy, and usually is satisfactory to the patient. When this condition is reached a wider latitude of treatment is permitted. Gradually the hot ablutions may be withdrawn, and the use of less stimulating lotions and ointments may be advised. Sulphur, having the highest reputation in the disorders of the sebaceous glands, is a constituent of many of the lotions thus employed. One of the best is Vlemineckx's solution (see page 93), of which from 10 to 60 drops in a tablespoonful of water may simply be mopped on the face and allowed to remain over night, or may be applied with gentle friction and massage.

Taylor¹ advises the following:

R	Sulphuris loti,	℥iij;	12	
	Camphoræ spts.,	f ℥iij;	12	
	Sodæ biborat.,	℥ij;	8	
	Glycerin.,	f ℥vj;	24	
	Aq. fontan.,	ad f ℥iv;	ad 120	M.
Sig. Shake well and apply freely, leaving a thin film of powder over face.				

Various combinations of sulphur with alcohol will be found useful. Thus, Kaposi recommends a paste composed of:

R	Sulphur. præcip.,	℥ijss;	10	
	Spts. vin. rect.,	f ℥jss;	45	
	Lavand. spts.,	f ℥ijss;	10	
	Glycerin.,	℥xx;	133	M.
Sig. To be spread over the face and retained during the night.				

Or,

R	Sulphur. flor.,	℥ijss;	10	
	Spts. sapon. virid.,	f ℥v;	20	
	Lavand. tr.,	f ℥ij;	60	
	Peruv. bals.,	℥xx;	133	
	Camphor. spts.,	℥xv;	1	
	Bergamot. ol.,	℥v;	33	M.
Sig. To be applied over the face at night.				

¹ American Clinical Lectures, New York, 1878, vol. iii., No. 10.

Duhring recommends the following :

R	Sulphur. præcip.,	℥ij;	8	
	Glycerin.,	f ℥ij;	8	
	Alcoholis,	f ℥j;	30	
	Aq. calcis,	f ℥j;	30	
	Aq. ros.,	f ℥ij;	60	M.

Sig. Shake the vial before using.

Resorcin, next to sulphur, is probably the most valuable remedy in acne as in other sebaceous gland disorders. It may be used in the above formulæ in place of sulphur, or combined with it in strength varying from 2 to 10 per cent. Ichthyol and thiol are similar in their action to sulphur, and sometimes succeed when the latter fails. They may be used in ointments, in lotions, or combined with glycerin. The discoloration produced is easily removed, as both substances are soluble in water.

Ammoniated mercury, 2 to 15 per cent., in lanolin or other simple ointment is an effective remedy. Mercuric chloride is very generally employed in the strength of from $\frac{1}{8}$ to $\frac{1}{2}$ grain (0.008–0.033) to the ounce (30.) of emulsion of bitter almonds as a lotion; and the protiodide and biniodide of the metal are similarly applied in lotions and unguents, in the strength of from 5 to 10 grains (0.33–0.66) to the ounce (30.). One should be careful not to make use of mercurials at the same time with a compound of sulphur, lest a chemical combination occur by reason of which mercurous sulphide (æthiops mineral) be precipitated upon the skin and produce the appearance of comedo.

For mild cases an excellent lotion is obtained by adding 2 drachms each (8.) of simple tincture of benzoin and glycerin to 4 ounces (120.) of distilled water, to which, where a more stimulating effect is desired, 1 ounce (30.) of cologne-water or of alcohol may be added, or 1 scruple (1.33) of sulphurated potassa.

Occasionally rumex ointment may be used with advantage as the basis of sulphur and other salves in acne. It is prepared according to the following formula :

R	Rum. crisp. rad.,	℥ix;	270	
	Adipis,	℥vj;	180	
	Ceræ flav.,	℥j;	30	
	Aq. pur.,	q. s.	q. s.	

Wash and bruise the roots; boil for two hours; strain; evaporate to 4 ounces (120.); gradually add the wax and lard in a melted state; and stir until cool.

The English sulphur hypochloride, in ointments of the strength of those given above, and sulphurated potassa, $\frac{1}{2}$ to 1 scruple (0.66–1.33) to the ounce (30.) of lotion or of ointment, are effective, but objectionable on account of their odor.

Mercurial plaster may be applied on strips of linen or iodated glycerin (5 parts of each of pure iodine and potassium iodide to 10 of glycerin) may be applied with a brush twice daily until from six to twelve applications have been made. Van Harlingen employs 1

drachm each (4.) of sulphurated potassa and zinc sulphate to 4 ounces (120.) of rose-water. Fox applies $\frac{1}{2}$ drachm (2.) of chrysarobin to the ounce (30.) of collodion. Taylor advises from 5 to 25 grains (0.33–1.6) of zinc iodide to the ounce (30.) of vaselin.

The paste recommended by Lassar is useful in some cases—that is, 1 part of beta-naphthol, $2\frac{1}{2}$ parts each of vaselin and *sapo viridis*, and 5 parts of precipitated sulphur—spread over the skin for from fifteen to twenty minutes, and then wiped off, when the surface is dusted with French chalk. In obstinate cases with few lesions the touching of the parts with pure carbolic acid or with salicylic acid, or with acid nitrate of mercury, is useful, but such measures should be condemned for the majority of patients at or near puberty. A fine needle connected with the negative pole of a galvanic battery may be employed to destroy single and indurated papules or papulo-pustules.

For chronic and indolent cases one of us devised a modification of the local treatment of acne by the aid of an instrument called the “massering-ball,” figured on page 104. This instrument consists of a stout, short handle of hard rubber, connected by means of a slender steel neck with a ball set in a steel socket, the small sphere rotating within the cup of the socket, as in an ordinary ball-and-socket joint. The free play of the ball is aided by its bearing upon a smaller ball set in the neck of the cup attached to the handle, which is fixed upon the socket at an angle sufficiently convenient for the operator, whose eye can thus better follow the play of the ball. The ball is constructed of hard rubber, and the area of its impact upon the skin at any moment is about that of the human thumb of average size similarly placed. When actually in use the ball travels with ease as well along the angles of the nares with the cheeks, the bridge and root of the nose, and the regions below the symphysis menti, as over the brow, the temples, the chin, and the cheeks. When necessary to cleanse the instrument the ball is detached by unscrewing; but the entire instrument may be boiled without impairment of its usefulness.

When ready for treatment the skin is first operated upon with aseptic needle and comedo-extractor until all pustules and subepidermic foci are emptied and conspicuous comedones are removed. After this the surface is rendered aseptic, either with one of the bichloride lotions or with a solution of formalin (40 per cent. of formic aldehyd) in the strength of from 0.5 to 2 per cent., according to the sensitiveness of the patient's face. The massering-ball is then rotated freely over the surface, and deep pressure is made upon the affected region, with the result of bringing into view groups of previously inconspicuous comedones, which are in turn removed by the extractor or “presser.” Lastly, massage of the surface is practised with the ball by the aid of a salicylated cocoanut-oil or by one of the sulphur unguents.

The use of caustics in acne, though recommended, should in general be discountenanced as needless. In extreme induration of the lesions these may be rubbed with fine pumice-stone until the desired effect is produced.

The powders employed in the milder forms of the affection are finely powdered sulphur, which may freely be dusted over the face, and those

compounded in various proportions of starch, rice-flour, zinc oxide, and bismuth subcarbonate.

Relief of acne in young male patients has been reported after the passage of the urethral sound, and in both sexes by hot- and cold-water injections of the vagina and urethra.

Prognosis.—The majority of patients, even when untreated, eventually recover. This natural involution of the disease is commonly attained in proportion as the body arrives at the maturity of its development and accomplishes the sum of its important functions. Appropriate treatment has, however, a satisfactory influence in hastening the recovery of a large number of all patients. A small minority suffer from the unsightly complications and sequels of the malady (cicatrices, keloid). Exceedingly rebellious and even grave cases occur in the cachectic, those long and improperly treated, and those who from necessity are continuously exposed to influences unfavorable to the involution of the disorder, such as the subjects of epilepsy habitually ingesting potassium bromide, and the victims of syphilis requiring persistent use of the salts of iodine.

ACNE ROSACEA.

(ROSACEA, GUTTA ROSEA, TELANGIECTASIS FACIEI, NÆVUS ARANEUS, "BRANDY-NOSE," COPPER-NOSE. *Fr.*, ACNÉ ROSÉE, COUPE-ROSE; *Ger.*, KUPFERROSE, KUPFERFINNE.)

Acne rosacea is most often displayed upon the nose, cheeks, and chin, but may occur on any part of the face, and rarely on the lateral regions of the neck. It is seen usually in middle life, and occurs rarely before the twenty-fifth year.

Symptoms.—In the first grade there is a more or less diffuse pinkish or dusky, but transitory redness, involving the extremity of the nose and its contiguous parts, which coloration may extend from this region in a somewhat symmetrical figure over the cheeks and chin. The redness may be uniformly spread over the regions involved, or displayed in irregular, ill-defined blotches which vary greatly in size and shape. The spots may be roundish, radiating, stellate, linear, tortuous, or of fantastic outline. The colors vary from a delicate rosy-pink to a deep-purplish crimson. Minute capillaries often ramify over the erythematous surface. The effect is a marked unsightliness, for which chiefly, or only, the advice of the physician is sought, as the affected parts give rise to little or no subjective sensations. Under pressure with the finger the color disappears, the surface seems cool rather than hot, and the sebaceous glands are seen to be affected, as there is usually present either a seborrhœa oleosa or an accumulation of yellowish-white, moderately inspissated sebum in the patulous orifices of the gland-ducts.

The disorder varies greatly with the general condition of the patient. At times it may scarcely be perceptible; again, after the stimulation produced by ingested food or by alcohol, after mental excitement, a paroxysm of coughing or laughing, or exposure to external irritation the lesions may be even conspicuously deforming. This condition may

endure for months or for years and then disappear, or may be succeeded by the second stage of the malady.

In a second grade of the disease the redness becomes permanent, though subject to frequent variations in intensity, capillaries dilate passively and appear as conspicuous, tortuous, straight, or anastomosing lines of reddish color about the nose, cheeks, chin, or forehead. Firm, purplish-red, painless, pinhead- to pea-sized nodules or papules often rise from the erythematous surface, and they either display minute superficial and tortuous blood-vessels in the integument with which they are covered, or they project from a base about which such a telangiectasis has very irregularly been developed. The lesions are apt to be intermingled with those of *seborrhœa oleosa* or with *acne vulgaris*. When fully developed, this stage of the disease, though generally not productive of marked subjective sensation, produces an exceedingly conspicuous deformity.

In the third stage (which is the most pronounced of the three) roundish, sessile or pedunculated, lobulated or pendulous, firm, elastic, pinkish-red, bluish, livid, or violaceous vegetations, traversed by a finer or larger network of blood-vessels, slowly develop about the affected part of the face, chiefly the nose. These vegetations may be single or multiple, and in the latter case may be isolated or so closely united as to be scarcely distinguishable from one another. The acneiform lesions seen in the second grade of the disease may here also be apparent. The nose is often cold to the touch when bright red in hue, and it may be peculiarly oily or greasy in appearance in consequence of a *seborrhœa oleosa* of the part. The so-called "brandy-drinkers'," "wine-drinkers'," and "whiskey-drinkers'" noses are of this class. In some cases there is a uniform and symmetrical hypertrophy of all the soft parts of the nose, which may thus attain colossal proportions. It is these extreme consequences of *acne rosacea* to which the term *RHINOPHYMA* has been applied.

The course of the disease is very slow, and in by far the largest number of patients does not produce the exaggerated types of the second and third grades. The lesions may persist indefinitely as indolent symptoms of the malady in any one of its stages, or in a case in which there has been no new growth of vessels or of tubercles may proceed to spontaneous involution.

Etiology.—The first and second grades of *acne rosacea* are common in women either at puberty or near the period of the menopause, in those who are pregnant, or in those who suffer from utero-ovarian disease, frequent miscarriages, sterility, irregular performance of the menstrual function, or chlorosis.

The disease, however, is seen in men of early and of late adult life. In both sexes it may occur in anæmic and asthenic states; in both, also, its association with gastro-intestinal dyspepsia, constipation, and the immoderate use of strong tea and alcoholic drinks—beer, wine, and spirits—is a matter of common observation. According to Kaposi, the rosaceous nose of the wine-drinker is bright red; that of the beer-drinker, cyanotic or violet; that of the spirit-drinker, smooth, supple, fatty, and dark blue. The new growth of vessels and tubercles, with

the rhinophyma of the advanced grade of the disease, is much commoner in men than in women. In those whose faces are bronzed by exposure to the weather the telangiectasic condition of the cheeks, rather than of the nose, is of frequent occurrence. Veteran sailors and soldiers are thus commonly affected. Persons who have frozen the nose or the cheeks on one or more occasions are similarly liable to telangiectases. Any externally or internally operating cause which tends to retard the capillary circulation in the superficial portion of the skin is capable of inducing this result. Acne rosacea is at times conspicuously displayed in the mulatto.

Pathology.—In the first stage of acne rosacea there is merely passive hyperæmia. The circulation in the superficial capillary plexus is retarded. Persistence of this condition for long periods of time results in paresis of the capillaries, with their consequent dilatation and hypertrophy, phenomena which characterize the second stage, the sebaceous gland-disorder being a complication of the process. In the third stage the nodules are composed of newly formed gelatinous elements, which later are replaced by organized connective tissue. According to Biesiadcki, there are also dilatation and hypertrophy of the sebaceous glands, with dilatation, hypertrophy, and new growth of the superficial blood-vessels, and enlargement also of those trunks which ascend from the corium. There is no marked epithelial hypertrophy (Unna).

The disease, however, is viewed differently by authors. By some its obvious connection with acne vulgaris is denied; by others it is regarded as a seborrhœal eczema. According to Besnier and Doyon, this disease represents: (*a*) superficial or deep, at first intermittent, then persistent, hyperæmia; (*b*) sebaceous hyperæmia (acne-eczema), in which there are unquestioned steatorrhœa and implication of the sebaceous glands with infiltration and possibly exfoliation of the skin; (*c*) deep hyperæmia with infiltration of the corium and plastic products about vessels, follicles, and perifollicular tissue; (*d*) telangiectases, as described above; and (*e*) hypertrophies of the perifollicular derma.

Diagnosis.—Acne vulgaris is distinguished from acne rosacea by the absence of telangiectasis, and of the hypertrophic growths which characterize the developed lesions of acne rosacea. The tubercular syphiloderm is recognizable by its tendency to ulceration and crusting and by the entire absence of telangiectasis. When the tubercles of syphilis are limited to the extremity of the nose (they are usually small in consequence of the influence of treatment) they often degenerate into characteristic, split-pea-sized, irregularly circular ulcerations, which are superficial in seat and frequently isolated. They leave similarly shaped and sized depressed cicatrices at the tip and neighboring parts of the nose. As the process is much more rapid than in acne rosacea, these lesions, considered in connection with the absence of telangiectasis, furnish the most significant diagnostic symptoms of the disorder, for they often occur late in the history of syphilis, in individuals in middle life, and in varying shades of a dull-reddish color, circumstances particularly favorable for confusion regarding the identity of the two diseases.

Zoster from involvement of the superior maxillary branch of the

trigeminus, with diffused redness of one side of the nose and efflorescence of vesicles over its tip and ala, strongly resembles acne rosacea with pustular lesions; but in zoster the painful character of the disorder, its limitation to one side of the face, its transitory career, and its vesicular lesions are characteristic.

Lupus vulgaris, like syphilis, when occurring upon the nose, is to be recognized by the tendency of its papulo-tubercular lesions to ulceration and crusting, by the absence of vascularity, and by the frequent presence of characteristic cicatrices. Unlike syphilis and acne rosacea, however, the history of lupus vulgaris usually extends from early childhood. Lupus erythematosus is characterized by a definite outline, by a superficial infiltration and elevation of the border of the patch, by an atrophic or scarred centre, by adherent scales, and by its symmetrical diffusion over much larger and defined areas, commonly extending from the bridge of the nose well on to the cheeks.

Treatment.—So far as there can be said to be any internal treatment of acne rosacea, it is that employed in acne vulgaris; but in neither disease can such treatment be confidently described as effective in the dispersion of the local lesions. The treatment is that of the patient rather than of his disease. When alcohol has been in any degree productive of the local effects the use of spirits, wines, and beer is to be interdicted; but as regards confirmed rosacea this prohibition will prove to be of little avail. The disease when resulting from spirit-drinking may persist after years of total abstinence.

The diet should be of the character proper for the patient with acne. All imbibition of hot liquids, even tea and coffee in excess, should be restricted as tending to congest the blood-vessels of the face. Everything having the same result in the habits, the occupation, or the clothing of the patient should be, as far as possible, deprived of influence, as, for example, wearing of tight collars and corsets, working over hot fires, etc.

In many patients who are the subjects of rosacea, as distinguished from the younger class of sufferers from acne vulgaris, there are evidences of lithæmia, gout, and similar conditions, requiring even stringent rules in many particulars for the conduct of life. The use of sugar in many of these cases is to be restricted, meat should be forbidden or permitted but once in the day, and other articles of food be selected with special care. Tobacco should never be allowed to male patients with well-marked symptoms, and the daily general bath described in the preceding chapter as of importance in the treatment of acne should here also be prescribed.

All gastro-intestinal sources of mischief should also be set aside when practicable. In acne rosacea, even more than in acne simplex, dyspepsia and constipation are conspicuously effective factors.

Internally, nux vomica, ergot and ergotin, ichthyol (ammonio-sulphate), mineral acids and alkalies, and arsenic have been recommended. Most of these drugs are valueless in removing the symptoms of the disease unless their use is indicated by the general condition of the patient. In gouty patients blue pill and alkalies, though not of themselves capable of relieving the rosacea, may serve to aid the

patient; the same may be said of the use of iron in chloro-anæmic women.

The local treatment of the first grade of acne rosacea is substantially that of acne vulgaris. Stimulating lotions of green soap, formalin, alcohol, mercuric chloride, or sulphur in connection with ablutions in hot water, are of the highest value. In addition, the various ointments containing sulphur, resorcin, mercuric oxide, and iodides, and the continuous application of mercurial plaster should be employed if necessary.

Van Harlingen reports rapid results from the application, several times in the day, of a lotion composed as follows :

R	Sulphuris præcipit.,	3j ;	4	
	Pulv. camphoræ,	gr. v ;		33
	Pulv. tragacanth.,	gr. x ;		66
	Aq. calcis, }			
	Aq. rosæ, }	āā f 3j ;	āā 30	M.

Fox, of New York, applies chrysarobin in traumaticin, $\frac{1}{2}$ drachm (2.) to the ounce (30.) ; but this drug should be reserved for intractable cases, as it may produce severe dermatitis. After the production of these effects, however, the benefits secured may be appreciable for months.

In the second stage of the disease the treatment is the same as in the first stage, but when all the inflammatory phenomena have yielded and the causes of the local congestion have been removed, the vessels and remaining nodules may be destroyed by single or by multiple puncture of each with a fine cambric needle attached to the negative pole of a galvanic battery with six to ten elements in the circuit. This operation is better than the knife, and it may be regarded to-day as the effective method of removing blemishes produced by dilated blood-vessels in this stage of rosacea. The method is simple, readily executed, requires no anæsthetic, and is in many ways superior to other methods, to which resort should be had when electrolysis cannot be employed. Some vessels may completely be destroyed with the production of so slight a cutaneous cicatrix that in the course of a few months it cannot be recognized by the unaided eye.

For details of this simple operation the reader is referred to the chapter on Hypertrichosis. For the cambric needle may often be substituted with advantage a fine jeweler's brooch, annealed in the flame of a spirit-lamp. The vessels may be entered in one or several places, and the operation be repeated until the last thread-like evidence of their existence has disappeared. The number of cells brought into the circuit must be somewhat graduated to the requirements of each case and to the locality of the skin operated upon. Fewer cells can be tolerated for the lip and alæ nasi than for the root of the nose, the cheeks, or the forehead. Next in value after this operation may be named :

Brushing the part cautiously with solutions of caustic potash, from 10 to 30 grains (0.66—2.) to the ounce (30.) of water ; and the local use of pure carbolic, chromic, pyrogallic, and glacial acetic acids,

acetum cantharidis (Taylor), sulphur iodide, or solution of mercury pernitrate. Before these drugs are employed, however, an effort should be made to produce exfoliation by spreading over the part a plaster made of green soap. Unna's mercurial plaster-mull is similarly applied. Kaposi highly recommends the solution of iodated glycerin employed by him in acne vulgaris (*q. v.*), which solution is painted over the part from eight to twelve times daily for three or four successive days, and is immediately covered with gutta-percha tissue.

Multiple scarification of all new-growths after the manner of attacking lupus-nodules, erosion with a dermal curette or with a Braun spoon, and surgical ablation or decortication of tumors by ligature and knife, are also available. After any destructive attack upon the diseased portions of the skin soothing lotions, fomentations, or ointments should regularly be applied.

Prognosis.—A favorable prognosis can be given in cases in which the disease occurs in its milder forms. Even in cases complicated by marked telangiectasis and hypertrophy the results of treatment are often in the highest degree encouraging. Notwithstanding the most energetic procedures, however, the *vis-a-tergo* of passive hyperæmia, involving often the deeper and unassailed blood-vessels, may work its slow progress. For women the future is in general more promising than that of men. With the most unfavorable prognosis, however, it is to be remembered that, after all, the disease is one of deformity rather than of physical discomfort.

ACNE VARIOLIFORMIS.

(ACNE FRONTALIS, ACNE RODENS, ACNE NECROTICA, ACNE ATROPHICA, FOLLICULITIS VARIOLIFORMIS. *Fr.*, MILIAIRE SCROFULEUSE.)

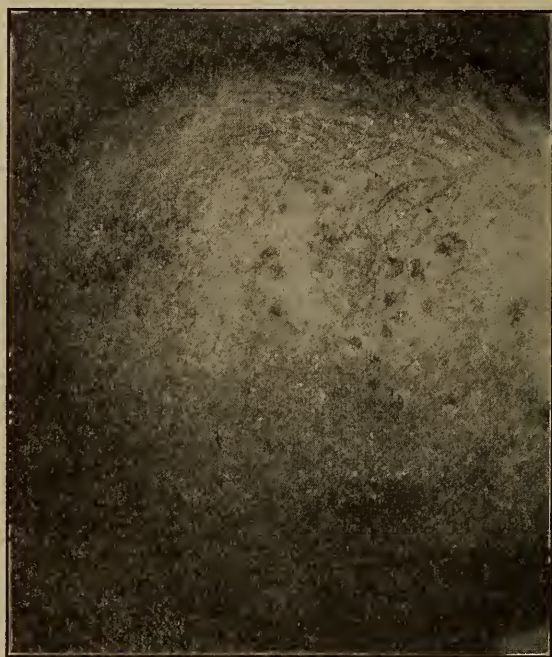
This disease is not to be confounded with that to which Bazin and other French writers once gave the name *Acné varioliforme*, viz., molluscum epitheliale (molluscum verrucosum of Kaposi).

Symptoms.—The disease is characterized by the occurrence over the centre or the upper portion of the forehead, the temples, or margin and central portions of the scalp, of pea- to bean-sized, firm, reddish-brown papules, which become pustular at the apex, and which are commonly exceedingly indolent and often grouped. The pus of these lesions desiccates in crusts which are flattish, closely adherent, and apparently depressed below the general level of the skin. On the fall of the crusts there is left a rather deeply tinted brownish-red cicatrix-form lesion, somewhat resembling the cicatrix of variola, from which the disease received its name. The scar much more closely resembles, however, the results of the involution of the pustulo-tubercular syphiloderm in groups. The subjective sensations are slight, at times there is itching. The disease tends to recur and is exceedingly chronic in course.

In exceptional cases the disorder occurs in other regions than those named above; for example, over the dorsal and sternal aspects of the

trunk, about the nose, and within and about the concha of the ear. In one of the authors' patients (the subject of the accompanying illustration) the disease left very disfiguring scars on the right ala of the nose. The lesions are often traversed by a hairy filament. In some cases the affected regions are so thickly invaded that the resulting scars produce a cribriform aspect in the integument. Occasionally the arrangement of the lesions is linear or is circinate.

FIG. 49.



Acne necrotica.

The variations displayed are exceptional, but worthy of note. Severe confluent, serpiginous, and very extensive developments of the malady may be seen. According to Boeck, the hue of the papulo-pustule is due to minute capillary hemorrhages, which later become invisible in consequence of tumefaction of the overlying integument.

Etiology.—The sexes are represented nearly equally among the subjects of the disease, who are, as a rule, in or near middle life. The causes of the disease are unknown, but the microbic origin of acne varioliformis, together with necrotic granuloma and folliculitis, is well-nigh established.

Pathology.—Fordyce and Sabouraud state that the disease begins in the upper part of the hair-follicle, from which point it extends to the entire follicle and to the sebaceous gland. Various micro-organisms are found in the lesions, but the active agent is apparently a staphylococcus. Sabouraud¹ believes the disease is always preceded by seborrhœa. The inflammation usually terminates in central necrosis and subsequent scar-formation.

According to Unna, acne varioliformis is produced by a mixed infection. At first there is plugging of the lanugo-follicles with a firm

¹ Annal. de Derm. et de Syph., 1899, p. 845.

scale. Along with this is a marked perifollicular cell-agglomeration, penetrated by extensively dilated lymph-spaces. Later the follicle distends with an abundant growth of a bacillus 1 to 1.25 μ in dimensions. Still later the diplococci of seborrhœic eczema are seen with colonies of bacilli in the centre of the distended sac. At first the diplococci simply furnish a sero-fibrinous crust. By their active development at a later stage in the depth of the tissue they lead to necrosis and subsequent cicatrization. Some of these cases may be due to infection with the toxins of tubercle-bacilli. *Acne varioliformis* occurs in typical development upon the faces of the tuberculous. For further details in this connection, the paragraphs devoted to the paratuberculoses of the skin (Necrotic granuloma, folliclis, etc.) should be consulted.

Diagnosis.—The lesions are to be distinguished from the syphiloderm named above, from *acne vulgaris*, and from variola. The points of distinction are: the absence of fever, present and precedent; the absence of other symptoms of syphilis; the localization of the eruption; and the absence of intermingled comedones and other symptoms of *acne disseminata*. The involvement of the scalp-surface is not alone sufficient to distinguish it, as syphilodermata and occasionally comedones are visible in the scalp above the brow.

Treatment.—The disease usually yields readily after the use of antiseptic lotions or of ointments containing white precipitate, resorcin, sulphur, mercuric chloride, formalin, or boric acid, though lesions are likely to develop after suspension of treatment. In severe cases caustics or galvano-puncture may be required.

IMPETIGO HERPETIFORMIS.

Knowledge of this rare disease is limited to the reports of thirteen cases observed by Hebra and Kaposi in the Vienna clinic; one by Heitzmann in New York; one by Pataky; and a few scattered cases reported by others. Of the Vienna patients, twelve were women, and the most of these were in the puerperal state.

Symptoms.—Pinhead-sized pustules, usually closely packed in groups, filled with an opaque or a yellowish-green fluid, are discovered upon the surface of the groins, the navel, the axillæ, the breasts, and other portions of the body. A dirty brownish-colored crust is formed by rupture or desiccation of these lesions, and about this crust, single, double, or triple concentric circlets of new and similar lesions appear in succession, each series undergoing a similar process of involution. The eruption thus extends until the circlets from different foci of origin unite, and extensive areas of the skin are involved. Beneath the crusts the skin is reddened, infiltrated, smooth, and covered with a new epidermis, moist as in eczema or exhibiting a denuded corium. It is never in a state of ulceration. In the course of three or four months the eruption is well-nigh universal, the skin being swollen, shining, and crust-covered, or seamed with excoriations surrounded by circles of pustules. Exceptionally there are multiformity of lesions and the occurrence of the disease in women who are not pregnant. The lingual mucous membrane exhibits grayish, centrally depressed

patches, well defined in contour. Alternate rigors and febrile accesses mark the periods of recrudescence when new pustules form. Delivery seems to have no favorable effect upon the course of the disease in pregnant women. An endometritis with peritonitis was discovered post mortem in a single case. Two women only of the thirteen Vienna patients survived; one suffered from a relapse after several weeks of improvement.

The **Etiology** and **Pathology** of the disease are necessarily obscure, having in view the relatively small number of reported cases.

Dumesnil, Marx, and Dubreuilh have examined the skin removed from living subjects of the disease, and have discovered dilatation of the blood- and lymph-vessels with swollen endothelium and embryonic cells surrounding these, especially in the papillary body at the base of the pustules. Cocci were present in the pustules, which are always within the epidermis, and there was acanthosis of the palisade-layer of prickle-cells. Post-mortem evidences of nephritis, endometritis, and pulmonary tuberculosis have been recognized in different cases.

The **Diagnosis** of the disease is between herpes, dermatitis herpetiformis, and pemphigus.

In herpes the purely vesicular character of the lesions and the cyclical career of the disease indicate its nature. In dermatitis herpetiformis there is commonly a distinct multiformity of lesions, and the subjects of the disorder are not, in such great preponderance, pregnant women. In pemphigus the size of the bullæ and their distribution in other than concentric groups will indicate the character of the disease. Special care should be taken to distinguish impetigo herpetiformis from pemphigus vegetans. The locality primarily invaded is the same in both diseases. For details consult the paragraphs devoted to the malady last named.

The **Treatment** is conducted on general principles, including the administration of antipyretics, and the local employment of alkaline or of carbolated baths; starch and other dusting-powders; anodyne, carbolated, or simple salves; and coal-tar. The uterus should be relieved of its contents.

The **Prognosis** is necessarily grave.

PEMPHIGUS.

(Gr. πῆμφιξ, a bladder.)

(POMPHOLYX. Ger., BLASENAUSSCHLAG.)

With respect to the question whether pemphigus should be regarded as the name of a distinct disease or of a group of several diseases, various opinions are held. At one time every dermatosis displaying blebs was accounted a form of pemphigus. With increasing knowledge there has been a greater reluctance to distinguish any disease by this specific term alone merely because of the presence of a bullous exanthem, and as a result a number of affections exhibiting bullous efflorescence upon the cutaneous surface have been wholly disassociated from both pemphigus and what the French term the "pemphigoid eruptions." For some

authors there is only a chronic pemphigus; for others, in order to establish a diagnosis of pemphigus, the existing lesions should repose directly upon the skin without exhibiting a peripheral inflammatory areola, or at least be the expression of a disease with periodic exacerbations in a determined career.

In many morbid conditions of the skin bullæ are present, when it is manifestly improper to call the disease pemphigus. For example, these lesions are exhibited typically in some forms of lepra, in inherited syphilis, often as a result of the traumatism of insects, and of several infective processes. To assert that a disease is a pemphigus in one of its varieties, it is necessary to recognize the presence of other symptoms than bullæ.

Symptoms.—The distinctions respecting the bullous dermatoses established by Brocq are worthy of recognition. In a first class are included, as suggested above, the bullæ which are epiphenomena of some malady (*e. g.*, erysipelas). In a second class the bullæ are either the main feature or one of the main features of a disease. The second class includes both the dermatoses in which the eruptive symptoms are not commonly of bullous type, but which become such under special conditions (*e. g.*, polymorphous erythema bullosum), and those eruptions to which the term *pemphigus* is assigned by the best authors.

It is to this second class, and to the last-named subdivision of the class, that the title is assigned in the paragraphs which follow. In this group are included: (*a*) Acute pemphigus; (*b*) Chronic pemphigus; (*c*) Pemphigus foliaceus; (*d*) Pemphigus of the newborn; (*e*) Pemphigus of young girls; (*f*) Pemphigus vegetans of Neumann.

It should be understood at the outset that these are simply clinical distinctions of value for the time being. There are doubtless other forms of pemphigus, some of which are named below; and there are unquestionably morbid conditions here described which may be classed later more appropriately with other affections.

Acute Pemphigus.—The rarity of this disorder has led observers to deny its existence. It is seen, however, though very rarely, in typical expression chiefly in infants and in young adults.

PEMPHIGUS ACUTUS BENIGNUS FEBRILIS occurs in adults, in children, and in infants, but more frequently among the very young. It may be epidemic in hospitals and in other public institutions. With or without an antecedent febrile movement, the blebs may appear before or within a fortnight after birth in infants that are well nourished or cachectic, more often the latter. In favorable cases the evolution of the disease is completed within three or four weeks. Any part of the body may be affected; but, what is important from a diagnostic point of view, the face, the hands, and the feet are often exempt. The conjunctivæ and mucous lining of the mouth may, however, become implicated. In some cases the pemphigus may be of hemorrhagic type. Underneath the lesions a reddish, glistening rete is exposed. The termination may be fatal. The greatest care is required to differentiate the disorder from syphilis, which is commonly not a difficult matter since the eruptive symptoms in syphilis are first developed, as a rule,

at a later period, are less acute, and they invariably exist upon the person of an infant exhibiting the characteristic cachexia of lues.

PEMPHIGUS ACUTUS MALIGNUS FEBRILIS is still rarer. As in the case of infants, in adults there may be marked febrile antecedents and systemic disturbance. The eruption of pea- to large nut-sized bullæ may be sparse or be abundant, covering in some cases the entire body and attacking mucous surfaces. The vesicles or bullæ may be tense, flaccid, and filled with clear, serous, or puriform contents. Covering the floor of the lesion may be seen a smooth, raw, mucous layer or a diphtheritic exudation. The bullæ, as a rule, are large, well formed, and irregularly distributed over the body, the face, and the limbs, with acuity of development. After a few hours or a few days crusts form, the latter, after their fall, leaving a slightly pigmented surface. The malignancy of this affection is at times formidable, death occurring in a week after the onset of the malady. In these cases there is usually a decided febrile movement, with vomiting, headache and other pains, stupor, delirium, and great nervous anxiety. In some cases the exanthem is productive of intensely pruritic or burning sensations; and when generalized the difficulty of placing the patient in a position of ease greatly aggravates the nervous state.

Pathologically the lesions are elevations of the horny layer with serum, having an œdematous prickle-layer in the periphery, with a base represented by an involuted prickle-layer permeated with leucocytes. Diplococci and saprophytes are found in numbers at the base of each bleb. According to Weyl, Bulkley's Herpes gestationis is an example of Acute pemphigus adultorum.

Chronic Pemphigus (PEMPHIGUS VULGARIS).—The term Pemphigus Vulgaris is applied to the more common clinical forms of the malady, and it has been employed generically by many authors to include all varieties of the disease. The title **PEMPHIGUS DIUTINUS** has been used also to designate that pemphigoid eruption in which the characteristic lesions follow each other with rapidity and in profusion, fresh bullæ appearing each day. Fortunately, all forms of the disease are relatively rare.

The cutaneous lesions in chronic pemphigus are usually preceded by febrile symptoms; and the disturbance of the economy is declared in cardiac, respiratory, and gastro-intestinal derangements of function. The fever may be continuous, remittent, or intermittent, and is usually aggravated just before the appearance of a fresh crop of blebs.

The face, the trunk, and the extremities are chiefly involved. The eruption first appears bilaterally, somewhat symmetrically or asymmetrically, in reddish macules of rather vivid hue, in the centre of each of which appears later a whitish elevation of the epidermis suggesting a wheal. Either upon these or upon unaffected points of the skin there subsequently form tense, well-rounded or oval vesicles developing into bullæ varying in size from that of a pea to that of a hen's egg and even larger, and in number from three to six only, to a hundred and more; they are usually irregularly distributed (**PEMPHIGUS DISSEMINATUS**), but they may be clustered in groups, or very rarely be found the younger encircling the older lesions, so as to form

a circinate patch (PEMPHIGUS CIRCINATUS); their contents are serous or bloody (PEMPHIGUS HÆMORRHAGICUS), or, later, purulent, the color corresponding with that of pus. The bullæ often coalesce, and, whether ruptured or not, the involution of the lesion is accomplished by desiccation and crusting, the crusts being usually found to contain blood, pus, epithelial débris, and the exudate from the base of the bleb. Beneath such a crust there forms a new epidermis, which is usually violet, purplish, or bluish red in color, and which later displays a brownish pigmentation which may survive the disease for several weeks.

Occasionally the affection occurs with very mild and even insignificant phenomena (PEMPHIGUS BENIGNUS). There may be no fever, and very few blebs appear; in some cases but a single lesion can be seen (PEMPHIGUS SOLITARIUS). In other instances the fever is intense; the eruption abundant; the skin œdematous, painful, pruritic, excoriated; and the underlying lymphatic glands are enlarged. This general condition with exacerbations and remissions may persist for months, and the eruption may then disappear never to return, or to recur, as it often does, in the future.

Clinically, many of the distinctions between the varieties of pemphigus disappear. Between the benign processes just considered and the grave form of pemphigus foliaceus described below several intermediate gradations can be observed, and even the most benign may at times unexpectedly assume the most malignant phases. PEMPHIGUS MALIGNUS is a name given generally to those intermediate varieties of the disease, most of which are distinguished by persistent and prostrating fevers; by cachexia, especially in infants; by the occurrence of diphtheritic patches upon or about the lesions, with infiltration of the derma and slough of its superficial layers; or by extensive crusting, and even subsequent ulceration.

In all varieties of pemphigus the lesions may be exhibited upon the mucous membrane of the accessible outlets of the body.

Chronic pemphigus exhibits the greatest variation both as to its symptoms and as to the period of their efflorescence. There may be a week or a month of immunity, followed by benign relapses or by malignant and rapid recurrences. The bullæ may form upon an unaltered or a deeply hyperæmic skin, in all sizes from that of a pea to that of an orange, invading the skin and mucous surfaces including the vagina, the lesions at the base exhibiting the several features described above. The eruption is rarely generalized, and throughout the course of the disease not more than half a dozen lesions may at any moment be visible upon the surface of the skin. Their contents may be removed by evaporation, absorption, or rupture, leaving a crust the color of which is largely determined by the contents of the bleb.

The areola, which may or may not be present in the several forms here described, is commonly narrow, and is fully developed only when the bleb is mature. The separate lesions may persist for days, or may rupture at an earlier period, leaving behind a superficial excoriation which after healing exhibits pigment.

The intercurrent disorders in the several forms of the disease designated may be numerous, death occurring from septicæmia, exhaustion

(especially when a deep slough results, as in pemphigus gangrænosus), and lymphangitis, the neighboring vessels and glands exhibiting evidence of the toxic effects produced by the cocci present. In some cases the general symptoms are absent or are insignificant, and the subjective sensations are limited to a slight feeling of burning or of tension. In other cases the blebs project from the affected surface and are well distended; in still others they are flaccid, the roof partially collapsing upon the serous, purulent, or bloody contents. The crusts which form are rarely bulky; they are more commonly dark colored and thin.

PEMPHIGUS PRURIGINOSUS is a name applied to that grave form of the disease in which the lesions give rise to an intense pruritus. As a result of the scratching induced by the pruritus they are torn, excoriated, and commingled with the crusts and exudations of an artificially engendered eczema. If the itching be severe, the vesico-bullæ may be so torn as to be difficult of recognition. Several of the malignant and intermediate forms may terminate fatally.

Pemphigus Foliaceus.—*Pemphigus foliaceus* is a rare variety of dermatosis which may originate in one of the common dermatoses or in a grave form of pemphigus chronicus, or may, at the onset, present characteristic features. Hallopeau and Fournier have reported cases which began as a dermatitis herpetiformis. The lesions are flaccid bullæ, which are developed without a perceptible preëxisting exanthem, and which speedily rupture and discharge their ill-conditioned contents, leaving beneath an excoriated, reddish or purplish, and at times inflammatory surface. Often the blebs are so poorly defined that the epidermis seems scarcely raised from the tissue beneath, the condition resembling that of the skin to which a blister has been applied, with the result of imperfect vesication. The contents, at first pellucid or lactescent, become later purulent or sanguinolent. When rupture of the blebs occurs there form yellowish-brown crusts which acquire a feeble attachment to the centre of the floor of the original chamber, while the edges remain free; these edges, visible over the affected surface, in polycyclical or irregular outlines, incompletely hiding the raw and sodden epidermis, present a characteristic picture.

The disease spreads gradually until it becomes symmetrical and universal, a peculiarity which marks it as unique among the pemphigoid eruptions, and which, in a striking degree, distinguishes it from pemphigus vegetans and from pemphigus acutus. As the disease advances the patient lies in a pitifully helpless condition, the remaining epidermis being completely undermined by the serum exuded, in places exposing large denuded areas of skin in a condition of inflammation of a low grade. Even, however, when the disease is fully generalized the appetite and bowel-function are at times unimpaired. In its later stages, after it has become generalized, the pemphigoid origin of the disease is not always easy of demonstration. In these instances large masses of greasy scales are exfoliated from the surface, the moisture proceeding from which is scarcely sufficient to attract attention.

The disease affects the mouth and throat, denuding the mucous surfaces of the epithelium. The scalp becomes affected, as also the covered

portion of the body. The hairs remain attached for a long time, but eventually they are completely swept away. Over the face, at first merely reddened and scaling, occur retractive processes which at times produce ectropion and consequent conjunctivitis. Over the body, especially at points pressed upon when reclining, profound ulcerations may destroy the deep skin. The palms and soles are infiltrated and fissured rather than the seat of much exudation. The nails are commonly furrowed and distorted; occasionally they are shed. The subjective sensations are those of burning, smarting, and soreness, rather than of itching. If the patient be kept in the continuous water-bath, though the disease be not thereby ended, the comfort of the sufferer is admirably secured.

There may be no fever, or there may be a rise of body-temperature with recurrence of lesions which, in a late stage of the disease, appear in the sites of those which have been very imperfectly followed by attempts at repair, a thin and glazed epidermis forming, in cases of chronic type, in the sites of former bullæ. In other cases the temperature remains above normal for weeks at a time, especially in advanced stages of the disease. The malady may complete its course in a few months or may persist for years, and though not necessarily, yet is unquestionably fatal in the majority of cases. Death usually results from exhaustion; occasionally an intercurrent pneumonia or diarrhœa concludes the history.

Pemphigus Neonatorum.—The disease to which this name is given should not be confused with pemphigus acutus (described above), which may occur both in the newborn and in young adults. Pemphigus neonatorum is a term which describes an affection observed exclusively in children. The lesions are ill-developed bullæ, which appear soon after birth in cachectic infants that have been subjected to unfavorable hygienic influences. The eruption usually occurs about the lower portions of the trunk, as these are the regions requiring most, and, in these unfortunate beings, receiving least care with respect to cleanliness. In some cases children healthy in appearance are suddenly seized with an attack, the skin, according to Fox, becoming livid, the bullæ being surrounded with dark areolæ, and ulcers forming as a result of gangrenous complications. These are probably cases of infection with pyogenic cocci in ill-nourished infants, where the reaction of the skin is expressed in a bullous rather than in a pustular efflorescence. The subjects usually perish in a few days, but they may survive if speedily provided with a hygienic environment. Infants thus affected are to be carefully distinguished from those suffering from inherited syphilis and exhibiting a bullous syphiloderm on the body.

The **INHERITED FORM OF PEMPHIGUS** described by Goldscheider, Legg, and others, most often noticed in summer, spring, or autumn, rarely in winter, is considered under the title of epidermolysis bullosa hereditaria. (See page 426.)

Pemphigus of Young Girls (PEMPHIGUS VIRGINUM).—This disorder, described by Hardy¹ is characterized by the appearance upon the skin of oval or rounded spots of a reddish or rosy hue; upon these

¹ *Traité prat. et descript. des Mal. de la Peau*, Paris, 1886, p. 268.

spots there later develop vesico-bullæ of different sizes, which it has been suspected are, in some subjects, instances of feigned eruption (*q. v.*). The subjects of the disease are between the fourteenth and the twentieth year of life, unmarried, and usually menstruating irregularly. Others have described a "pemphigus hystericus," to be recognized in hysterical persons of the same class, alternating or corresponding with hysterical attacks, the eruption not uniformly disposed over the surface, and being transitory in duration, disappearing with relative rapidity and leaving no cicatricial traces of its existence. Unna dismisses this affection from the category of true pemphigus.

Pemphigus Vegetans (ERYTHEMA BULLOSUM VEGETANS).—Neumann¹ was first to describe and furnish illustrations in color of a disease to which he gave this name, and which has since been studied by a number of observers. Crocker,² of London, published an excellent monograph giving tabulated results in some eighteen cases; and at the meeting in 1891 of the American Dermatological Association in Washington one of us³ read a full account of the first case reported as such in the United States, the patient having been seen in connection with Duhring, of Philadelphia.

The onset of the disease is marked by languor, malaise, and ill-defined symptoms of impaired health, after which the morbid symptoms may first be declared in the mouth or the skin. In the former region white patches, which are ill-developed blebs, are visible upon the mucous surface. The detached membrane forming each spot is finally loosened and leaves behind equal-sized excoriated patches, which produce extreme soreness of the mouth, and which as some heal are succeeded by others. In severe cases they render mastication and deglutition exquisitely painful; and in patients in whom this becomes a prominent feature of the case the nutrition of the body is seriously impaired.

The skin-lesions may precede or may follow those in the mouth. They are commonly first seen in women about the vulva, spreading over the anogenital region as closely set bullæ covered with a mucoid whitish secretion, the features thus strongly resembling the appearance of condylomata of the same region. In connection with the mouth-lesions, the suggestion that syphilis is present is very striking, and has led to this error of diagnosis in a large number of instances reported by those not expert in diagnosis. The bullous efflorescences, which at first resemble those of other forms of pemphigus, speedily exhibit in the site of their production vegetating masses, the change from the bleb to a fungoid papillomatous growth being scarcely appreciable. The lesions tend to become grouped about the axillæ, the circle at the root of the neck, the bend of the elbows, the hands, the feet, and the scalp, but they have no tendency to become universal, even when extensive. A singular change in the skin, where typical, well-formed bullæ have developed and healed, is a deep pigmentation in puncta resembling comedones, with pin-point-sized verrucoid eleva-

¹ Vierteljahr. f. Derm. u. Syph., 1886, Band xiii.

² Pemphigus Vegetans (Neumann). London, 1890.

³ Jour. Cutan. and Gen.-Urin. Dis., Nov. and Dec., 1891.

tions of the surface. In some regions the sequence of the closely packed blebs, followed by vegetating masses, resembles that seen in pemphigus foliaceus, in which, especially over the back after long decubitus, there form large, granulating erosions, exquisitely painful, and hastening the patient to the end. The disease progresses in unmistakable accessions of aggravation and improvement, lasting for months and occasionally for years. It is in the majority of cases eventually fatal. A few cases have been reported as cured. The authors have had two cases presenting typical features of pemphigus vegetans in which recovery was complete after two and four months, respectively, of treatment. In both cases, however, the eruption appeared a few weeks after vaccination, and was evidently the result of an acute, instead of a chronic, toxæmia. Variations occur, chiefly in the degree of febrile temperature, probably always reactive; in the severity of the buccal lesions; and in the extent of the eruption.

Etiology.—The causes of pemphigus are obscure; yet the connection of many varieties of the disease with changes in the trophic nerves and nervous centres is established by sufficient proofs. It is well known also that traumatisms and lesions of the cord have been followed by bullous efflorescence upon the body-surface. At the same time (as Kaposi has well shown), on the one hand, blebs from these demonstrable causes never resemble the portraits distinguishable in the varieties of pemphigus; and, on the other hand, there is no uniformity among lesions, either as to anatomical site or other features, in the spinal changes to be recognized in pemphigus with a fatal issue. Further, of nine autopsies of bodies dead of pemphigus examined by Kaposi and Weiss, in only one were changes found in the cord (diffuse sclerosis). The view that these dermatoses are instances of infective trouble is, therefore, gaining ground, and it is quite probable that future investigation will demonstrate that both the cutaneous and the nerve lesions are the results of a toxic agency operating with morbid results upon each.

Pemphigus is more frequently encountered in males, and among these in infancy and childhood, because the powers of resistance at a tender age are inferior to those of a maturer epoch. The disease is often observed in debilitated patients who are variously described as suffering from "nervous prostration," "mental worry and exhaustion," "neurasthenia," "general debility," visceral disorders, and impairment of nutrition. In vigorous, rosy-cheeked, strong-limbed adults the disease is rare. The states in which there is marked impairment of bodily vigor are particularly favorable to the development of the disease. It occurs in hysteria and other neurotic affections, but the etiological relations which these bear to the disease are undetermined. We have observed one case of the disease in an adult in whom pemphigus of typical appearance occurred after mental depression, which was so greatly increased by the appearance of the exanthem as to lead to suicide.

There is good reason to believe that in some of its forms the disease is contagious. The bullous lesions, however, seen in syph-

ilis, lepra, and other similar disorders should not always be here included.

The contents of the bullæ of acute pemphigus were found by Gibier, in 1882, to contain bacteria. His observations were confirmed by Vidal and Roeser. Demmé,¹ in 1886, found cocci both in the contents of the bullæ and in the blood. Whiphouse² found diplococci resembling those described by Demmé; and through culture and inoculation-experiments has furnished strong presumptive evidence in favor of the bacterial origin of the disease. Pernet and Bullock³ have recorded a number of fatal cases which occurred in butchers, the origin of which was traced to a local wound-infection. Other observers have searched in vain for a specific micro-organism of pemphigus either in the bullæ or in the blood.

Pathology.—Anatomical changes in the spinal cord have been recognized in pemphigus, as explained above, but in many cases careful search has failed to discover such changes. Déjérine and Leloir found in a case of pemphigus changes in the peripheral nerves due to degeneration.

Both in the bullæ and in the blood there is a marked increase in the number of the eosinophilous cells. In this respect pemphigus corresponds closely to dermatitis herpetiformis. The increase of the eosinophilous cells in both affections has been assigned to the effect of an irritant upon the nerve-centres; but more recently these cells have been found abundantly in vesicles produced artificially upon the sound skin of a healthy individual, and it is doubtful if any especial significance can be attached to them.

Most of the bullæ are superficially situated between the rete and the horny layer or in the upper part of the rete. They may be the result of an inflammation in the corium, but more probably are due to a mechanical separation of the rete-cells by a sudden effusion of fluid from the vessels of the derma, the papillæ becoming at the same time markedly œdematous. Unna, describing chiefly the final stage of chronic pemphigus, found extensive and deep infiltration of vessels in the cutis. The lymph-vessels and lymph-spaces are dilated chiefly at the margin between the cutis proper and the papillary body. The ridge-net is hypertrophic, containing mitoses, a normal granular layer, and a horny layer varying in thickness. In pemphigus foliaceus the ridge-net is flattened, and the suprapapillary layer is reduced to a minimum, so that the altered corneous layer stretches almost immediately above the heads of the œdematous papillæ. In general the œdematous epithelium is softened, and the prickle-borders and the interspinous spaces disappear. The epithelial cells of the coil-glands are swollen; that of the ducts to a less extent. The epithelial linings of the hair-follicles disappear in time with the hairs. The entire process points to a persistent vascular paralysis with dilatation especially of the subpapillary lymph-vessels and an œdematous swelling of the constituents of the skin, denser in the connective tissue, and accompanied

¹ Vierteljahr. f. Derm. u. Syph., 1886, p. 636.

² London Lancet, May 2, 1896.

³ Brit. Jour. of Derm., 1896, pp. 157 and 205.

with softening of the epithelium. The hairs and sebaceous glands play a purely passive part.

Diagnosis.—From what has preceded, it will be inferred that pemphigus is a name given to a disease, and not merely to bullous lesions upon the surface of the skin. It is of importance to remember this fact, as several authors have used the term in a purely descriptive sense, the truth being that bullæ are manifestations of several disorders, including syphilis, lepra, herpes iris, and erythema multiforme.

At the outset the blebs of pemphigus can scarcely be differentiated from those of other diseases. It is necessary for the recognition of the malady that consideration be had of all the cutaneous and other phenomena present in the disease. In syphilis blebs are rare in the adult, and relatively more frequent in infants hereditarily diseased. In infants the blebs are usually seen at birth, often upon the palms and soles, and are frequently superimposed upon an exulcerated base. The coexistence of mucous patches of the mouth, the vulva, and the anus with the other characteristic lesions and signs of grave cachexia, will usually indicate the nature of the disease. The cutaneous symptoms of infants thus affected are improperly designated as pemphigus. Such an eruption is a bullous syphiloderm.

In the bullæ of lepra there is usually coexisting cutaneous anæsthesia, and the involution of the bleb is followed by a strikingly characteristic atrophic patch, usually pigmented and insensitive. In pemphigus foliaceus the extraordinary and usually generalized desquamation which ensues is sufficiently distinctive, though it must be borne in mind that several varieties of pemphigus may be transformed, the one into the other, by well-nigh insensible gradations. Among its graver forms susceptible of such transformation may be named impetigo herpetiformis, pemphigus cachecticus, pemphigus diphtheriticus, and pemphigus pruriginosus.

In herpes iris the lesions are more vesicular than bullous and much more transitory; are concentrically arranged and vary in color; and are situated more frequently upon the extremities, especially the backs of the hands. The bullous lesions occasionally seen in urticaria and erythema multiforme are to be recognized by the other characteristic symptoms of these diseases; in the former, more particularly, by their intermingling with typical wheals, and in the latter by the location of the eruption and its climatic or seasonal significance. Some of the reported contagious forms of pemphigus, epidemics of which have been described by Besnier, Hervieux, and other French authors, were possibly, as Duhring suggests, instances of impetigo contagiosa. This inference is sustained by the frequent allusion of the writers named to the "varicellaform" appearance of the lesions.

In a large proportion of cases pemphigus vegetans has been mistaken for syphilis, the close grouping of the lesions about the anogenital region, and their striking resemblance to condylomata, taken in connection with the presence of erosions of the mucous membrane of the mouth, being the grounds for error. With care this blunder can usually be avoided. However closely packed together may be condylomata of this region, they rarely spread, as does pemphigus vegetans, beyond the

regions adjacent to the mucous outlets; while the bullæ of pemphigus vegetans, when the disease is fairly advanced, are not only exceedingly numerous and closely packed together, but they spread also beyond—high toward the pubes and low over the inner faces of the thighs. There is commonly a history of fever, no lymphatic adenopathy, and a distinct uniformity of lesions, each separate element being of bullous type.

Some ingested medicaments are capable of producing bullous lesions, for example, potassium iodide; such a possibility should always be borne in mind when establishing a differential diagnosis. Scabies in infants and older children is occasionally characterized by the formation of blebs, in which case the other lesions present, as also a history of contagion and the discovery of the parasite, will point to the real nature of the disease.

Lastly, the external application of cantharides, mezereon, the stronger acids, alkalies, and other chemicals may be followed by blebs produced either by accident or by intention with a view to feigning disease. The intentional production of such symptoms is usually effected upon the anterior faces of the lower extremities, regions within easy reach of the right hand. Erysipelas and dermatitis calorica are also affections in which blebs appear, always, however, of minor significance as compared with the other symptoms of disease present. The same may be said of the bullæ which form upon a gangrenous integument.

Treatment.—The internal treatment of pemphigus is a matter of importance, as will be suggested by even a brief consideration of the constitutional states in which it occurs. Jonathan Hutchinson, of London,¹ distinctly asserts his belief that “arsenic is a specific for the state of health upon which relapsing pemphigus depends.” In many years’ trial of this remedy he declares that, in his own practice, he has never recorded a single failure, though he makes exception, properly, of many infantile cases supposed to be syphilitic. This remedy is certainly a valuable one, but it should be employed with caution and in accordance with the rules prescribed in the chapter on Psoriasis. Kaposi, however, declares that he has been unable to obtain favorable results from its employment. Iron, quinine, ergot, strychnine, and the mineral acids are indicated in many cases, in conjunction with a nutritious diet. Cod-liver oil and the malt preparations on the market should not be neglected. Not infrequently the treatment should be directed to the relief of the anomalous performance of the sexual function in women, as pemphigus has been found to occur in the hysterical and chlorotic states common as a result of functional disorder.

The local treatment of the lesions should consist, first, in puncturing each bleb with a fine needle, in order to give exit to its contents, which should carefully be removed from the skin with the aid of cotton-wool. Then the parts are to be wholly enveloped in an antiseptic wet dressing, or freely dusted with a powder, such as zinc stearate or borated talcum. When there is considerable pyrexia, with heat and distress

¹ Lectures on Clinical Surgery, London, J. & A. Churchill, 1878, p. 49.

in the skin, the affected surface may be treated as in acute eczema, with oleated lime-water, containing opium or dilute hydrocyanic acid in some such proportions as those already detailed.

The ordinary lead-and-opium wash, with or without the addition of zinc oxide, will also answer a good purpose. The continuous hot water-bath still enjoys among experts the highest favor in the treatment of the grave forms of pemphigus. Kaposi kept a patient day and night for eight months with his body thus immersed, to the great advantage of the invalid. This continuous bath is often impracticable outside a large hospital; but in cases of grave pemphigus the continuous hot water-bath has been employed in private practice with the happiest results.

In pemphigus vegetans internal treatment is symptomatic, usually along the line of elimination and support; locally, the continuous bath affords speediest relief. If this cannot be obtained, the lesions should be cleansed thoroughly and dressed with antiseptic lotions or ointments, or dusted with borated, salicylated, or camphorated powders. The numerous scalp-lesions require cutting short the hairs of the head in order to make applications. Alcoholic stimulants are in most cases essential.

Prognosis.—The prognosis in mild cases of pemphigus, though much less grave than in the malignant forms of the disease, should always be formulated with caution. Unlike several of the diseases heretofore considered, the affection is one not frequently encountered in persons of fair general health. The constitutional condition of the patient must carefully be considered; it should not be forgotten that the disease is not only one liable to relapses, but also is one in which the graver may succeed the more benign manifestations. A flaccid summit of the bleb, sanguinolent or ichorous contents, an abundant efflorescence, and a rapid succession of new, after the involution of more ancient, lesions, are in general unfavorable symptoms. The same may be said of degeneration of the floor of the bleb after rupture and discharge of its contents.

HYDROA.

(Gr. ὑδωρ, water.)

(HIDROA.)

The term Hydroa was once extensively used as a designation of cutaneous disorders characterized by the occurrence of a bullous exanthem, the blebs being associated with erythematous lesions and productive of subjective sensations of itching. But since it is no longer employed by the best authors as a title of disease, it is here set down merely in order to enumerate some of the affections liable to be confounded under the title. The HERPETIFORM HYDROA of T. Fox; the DERMATITIS HERPETIFORMIS of Duhring; the HERPES CIRCINATUS BULLOSUS of Wilson; the HYDROA of Quinquaud; the HERPES GESTATIONIS of Bulkley; and the PEMPHIGUS PRURIGINOSUS of Chausit and Hardy, are included by some authors under the name

hydroa. According to Quinquaud, the essential symptoms of hydroa are: a primary vesico-bullous exanthem; a rapid evolution of symptoms; the termination of the disorder within two months as a maximum; the occurrence of pruritus in the active periods of the disease; and the recognition of varieties—pemphigoid, impetiginous, vesicular, circinate, regional, and of a form implicating the mucous surfaces.

Crocker describes a group of diseases by this name, “standing midway between erythema multiforme and pemphigus.” The most of them, even on the showing of French writers including Bazin, can without difficulty be assigned to the one class or the other.

Of the three varieties of hydroa proposed by Bazin, *HYDROA VÉSICULEUX* is identical with the Erythema and Herpes iris of Bateman, and *HYDROA BULLEUX* is a phase of Dermatitis herpetiformis. As a result of recent observations *Hydroa vacciniforme* would seem entitled to consideration as a distinct disease.

HYDROA VACCINIFORME, SEU ÆSTIVALE.

(HYDROA PUERORUM.)

This form of hydroa, first described in 1855 by Bazin, has been recognized only recently. Hutchinson, Hanford, Jamieson, Boeck, Crocker,¹ Bowen,² Graham, and others have seen and described a number of cases of hydroa vacciniforme.

Symptoms.—The disease usually begins during the first three or four years of life and gradually disappears during the few years following puberty. With but two or three exceptions the cases reported have been in boys. The disease is most active in summer, the larger number of patients remaining free from active manifestations during the winter months. The direct cause in most cases is exposure to the sun's rays, though exceptionally warm or cold winds, or even artificial heat, seem sufficient to cause an outbreak.

The eruption is symmetrical and is limited to the uncovered parts of the body; the bridge of the nose, cheeks, and ears, and the backs of the hands being the parts most affected. Bazin, however, reported cases in which covered portions of the body were slightly involved. The authors have under observation a case (the subject of the accompanying illustration) in which a new crop of vesicles and bullæ on the face is accompanied at times by an herpetic keratitis, the resulting scars interfering considerably with vision. The disease occurs in successive outbreaks, each of which lasts for two or three weeks. The intervals between recurrences in the summer may be several weeks, or so brief as practically to be wanting. The lesions first to appear are red macules or elevations, upon which are rapidly formed vesicles or bullæ, varying in size from that of a millet-seed to that of a large pea, and occurring either singly or in groups like herpes; they may coalesce. These vesicles may dry in a day or two, or they may rupture and form a crust, but many of the larger become depressed in the centre and

¹ Diseases of the Skin, 1893.

² Jour. Cutan. and Gen.-Urin. Dis., March, 1894.

resemble a vaccination-vesicle. The depressed centre is black or dark blue, and is surrounded by a ring of fluid, while about the whole is a reddened areola. Some of the lesions may become purulent. The dark centre is rapidly converted into a thick, black crust which is very adherent, and which on falling leaves a depressed, reddened scar that eventually becomes white and practically indistinguishable from that of variola. The duration of an individual lesion from its beginning to the formation of the crust is three or four days. The time required for the crust to fall is variable.

The eruption is usually preceded by some slight constitutional disturbance, and by burning or pain at the site of the lesions. Itching is absent, as a rule, though it was marked in Bowen's case.

FIG. 50.



Hydroa vacciniforme.

HYDROA ÆSTIVALE, HYDROA PUERORUM, SUMMER PRURIGO.—A type of eruption similar in appearance, history, and etiology to that of hydroa vacciniforme has been described by Unna, Hutchinson, Berliner, Graham, and others, under the names above enumerated. These eruptions differ from those of hydroa vacciniforme chiefly in being eczematous in nature. Itching is commonly present; macules and papules are more numerous than the vesicles, which are not umbilicated; and scarring is comparatively slight. The disease is found in girls, though less frequently than in boys.

The **Pathology** has been studied by Bowen in two lesions taken from a single case. In the primary stage he found merely vesicle-formation in the middle layers of the rete. In a more advanced lesion he found necrosis involving the lower layers of the stratum corneum, the entire rete, and the corium nearly to the subcutaneous tissue. He concluded that the process begins as an inflammation in the epidermis and upper part of the corium, followed by vesicle-formation in the rete, and later by the necrosis described above. The necrosis is

sharply circumscribed, and, showing through the vesicles above, produces the black centre of the advanced lesions. Bowen further calls attention to the points of similarity between this disease and those of *acne necrotica*, or of *acne varioliformis*.

According to Unna, the histological facts of the disorder are an œdema and cellular infiltration corresponding to a vascular area of the skin, the chief seat of which is the papillary body; an utterly passive behavior of the epithelium, exhibiting œdema and interepithelial blebs or, more commonly, elevation with serum; and, finally, the complete absence of leucocytosis.

The **Treatment** is unsatisfactory. To prevent recurrence the patient should be guarded from exposure to the sun and in some cases from hot or cold winds. Veils and coverings which exclude the light may be of service. Crocker recommends treating the eruption by opening the vesicles and applying iodoform in powder or in solution in ether. After removing the crusts with carbolized oil the surfaces may be dressed with an ointment containing iodoform and boric acid.

EPIDERMOLYSIS BULLOSA HEREDITARIA.

(ACANTHOLYSIS BULLOSA.)

This name has been given to a rare affection or condition of the skin in which there is a pronounced tendency to the rapid formation of bullæ wherever the integument may be slightly bruised or rubbed. Cases have been reported by Goldscheider, Köbner, Valentine, Elliott,¹ Beatty,² Bowen,³ and others.⁴ In the majority of cases reported the condition had existed from infancy or early childhood, and there was a clear history of heredity. Valentine reported eleven cases which occurred in four generations of the same family.

The general health of individuals thus affected may be excellent and the skin remain sound so long as it is subjected to no irritation, but in some cases very slight causes (the pressure of a shoe in walking; the grasping of a firm substance, such as the handle of a hammer; the friction of suspenders or waistband) are sufficient to cause the appearance of firm, tense, blebs at the site of the irritation. Such bullæ vary in size from that of a small pea to that of a walnut. They often last some days, having a firm roof-wall; are usually more or less painful, especially after rupture; and disappear without leaving either pigmentation or scar. The predisposition to the formation of new bullæ, however, remains indefinitely. In Bowen's case the bullæ were often hemorrhagic in type and were followed by pigmentation and scarring.

Histological studies of the lesions have thrown little light on the

¹ Jour. Cutan. and Gen.-Urin. Dis., January, 1895; Ibid., 1899, p. 539; and N. Y. Med. Jour., April 21, 1900.

² Brit. Jour. of Derm., 1897, p. 301. He gives a *résumé* of all previously reported cases.

³ Jour. Cutan. and Gen.-Urin. Dis., 1898, p. 253.

⁴ Cf. Rona, Arch. f. Derm. u. Syph., 1899, Bd. 1., S. 339; Russell, Jour. Cutan. and Gen.-Urin. Dis., 1900, p. 405; and Colombini, Il Morgagni, 1900, No. 10.

etiology and pathology of the process. Elliott examined portions of apparently normal skin from one of his patients, and found in all the sections a granular degeneration of the basal layer of rete-cells and frequently of adjoining cells. The changes were most pronounced in the interpapillary portions. This condition permits a serous effusion to separate rapidly the rete from the papillary body and produce bullæ. Elliott suggests that the disease is due to an excessive irritability of the cutaneous vascular supply, which responds to such slight stimuli as ordinary friction of clothing. The lower rete-cells are in consequence constantly bathed in more or less serous transudation, and degeneration results.

No treatment has been found capable of insuring relief.



Purpura Due to Copaiba.

(From a painting.)

CLASS III.

HEMORRHAGES.

PURPURA.

(Gr. πορφύρεος, purple.)

HEMORRHAGE into the skin may result from undue intravascular pressure, as in violent effort with extraordinary demand upon the circulatory system. It may occur with a normal intravascular pressure when there is lessened extravascular atmospheric pressure, as after ordinary exertion in high altitudes. It may result from disease of the vascular walls (as in malnutrition). It may result also from lack of support of the vessels due to various disorders of perivascular tissues, as where the epidermis is artificially removed, or where an abscess-cavity is evacuated of pus and the sac immediately fills with blood. It may be due to traumatism of the vascular wall. The discolored patches which result from contusions of the surface of the body are illustrations of this condition.

Purpuric eruptions occur in many and varied constitutional conditions. They are seen in the course of measles, scarlatina, variola, typhoid, and other specific fevers; in septicæmia; in toxæmias due to the iodides, bromides, copaiba, belladonna, quinine, and other drugs, or to other articles against which the individual has an idiosyncrasy or which he does not properly digest and assimilate; in rheumatic and gouty disorders; in the cachexias of renal, tubercular, malignant, and other diseases; and in functional and organic disorders of the nervous system.

In short, purpura occurs in such a variety of conditions that it must be considered as a symptom of these conditions, and not as a distinct disease. Moreover, its relation to these constitutional disturbances is not well understood, and a satisfactory classification of the different forms of purpura based upon their etiology or pathology is not possible. As a matter of convenience the cutaneous hemorrhages are grouped according to the predominating symptom into simple, rheumatic, and hemorrhagic purpuras. These groups are not sharply divided, however, but merge the one into another.

Symptoms.—The lesions of purpura have the following characteristics in common: They all are due to escape of blood into the tissues; they do not fade under pressure; they usually appear suddenly; at first they are of a bright- or deep-red color, which in a few hours or days changes to the duller and darker shades of red, purple, and brown,

which in turn, beginning at the centre, slowly fade through various shades of brown, green, and yellow to the normal color of the skin. On the lower extremities the pigmentation sometimes persists for years. According to their shape, size, and arrangement, the lesions of purpura are designated as PETECHIÆ which are pin-point- to small coin-sized, usually well-defined macules, sometimes situated about the hair-follicles; ECCHYMOSES, which are like petechiæ, except that they are larger and more irregular in shape and in distribution, sometimes covering the entire surface of a limb; and VIBICES, which are linear and band-like arrangements of ecchymoses. Occasionally the hemorrhage takes the form of bullæ (BULLÆ HÆMORRHAGICÆ), or of nut- to egg-sized, and even larger, tumors (ECCHYOMATA). At times purpura is seen in the form of minute papules. In addition to the clinical forms above described, purpura may appear as a complication and modification of the various lesions of erythema multiforme, urticaria, and other cutaneous diseases.

PURPURA PULICOSA is the result of the traumatism produced by fleas, lice, and bugs. The lesions are punctiform and are due to the welling up of blood into the minute punctured wound, which is surrounded usually by a hyperæmic halo, the result of the irritation. When the areola fades the central hemorrhagic point usually persists for a brief time. The disease is characteristically manifested upon the filthy skins of individuals long bitten by bugs and covered with excoriations and dark-colored crusts the result of scratching. Such cases are often pronounced scorbutic.

Purpura Simplex.—In this form of cutaneous hemorrhage, pinhead- to pea-sized, light-red to dark-purple petechiæ and small ecchymoses, usually multiple and symmetrical, a few at a time or suddenly in large numbers, appear upon various portions of the body-surface, chiefly over the lower extremities, and here doubtless by preference because of the greater effect of gravity upon the column of blood. The lesions usually awaken no subjective sensation, and they may occur in persons of apparently unaltered health, though rigid examination will often disclose some facts having a bearing upon the etiology of the disease. The subjects of the disorder may be asthenic, and complain of unwonted lassitude and malaise. The disease may last for a fortnight, and in exceptional cases may be accompanied by a rise of temperature. Lesions of this sort may be due solely to an ingested medicament, such as arsenic, salicylic acid, or quinine. The lower extremities may be covered completely with petechiæ induced by ingestion of potassium iodide.

PURPURA URTICANS is that form in which there is an irritability of the skin sufficient to produce wheals and other urticarial lesions that are accompanied by itching in various degrees and that have a purpuric hue in consequence of circumscribed cutaneous hemorrhage.

Purpura Rheumatica (PELIOSIS RHEUMATICA, ARTHRITIC PURPURA, SCHÖNLEIN'S DISEASE).—This variety of purpura, which has a striking analogy to erythema multiforme, is probably an exaggerated form of some of the conditions recognized under that title. It is preceded by the usual febrile or other premonitory symptoms associated

with arthritic pains, especially of the knees and ankles, which may become swollen or be affected with a hydrarthrosis. In a few days petechial to ecchymotic, light-red to dark-purplish maculations appear upon the extremities, the trunk, or the entire surface of the body, fadeless under pressure, and usually with coincident relief of the arthritic pain. The subjective sensations are ordinarily trivial. In a fortnight the eruption may subside, its color undergoing the usual variations from greenish to orange and light yellow; but relapses are common in the course of weeks, with recrudescence of the fever, return of rheumatoid symptoms, and progressive asthenia. The purpuric spots sometimes make their appearance regularly in the afternoon or evening, sometimes daily and often with several days' interval, accompanied by pain, stiffness, and swelling of joints. The arthritic symptoms are extremely variable and may be slight or severe. While most common in the knees and ankles, they may appear in any joints of the body. Associated with the purpura and the arthritic symptoms there are often mild or severe gastro-intestinal disturbances.

There are thus, in the majority of cases, three groups of symptoms, the cutaneous, the arthritic, and the gastro-intestinal. It is rare, however, for these symptoms to be equally severe in any one case, one or two of the groups being usually but slightly or not at all apparent. Frequently one group follows another. Thus, the arthritic pains may subside before the appearance of the purpura, or the reverse may be true. Throat-lesions, acute circumscribed œdema, and urticaria are often seen with one or more of the groups of symptoms above described. The intimate relation of purpura rheumatica to erythema multiforme is discussed in the pages devoted to the latter disorder. Cases are described in which there was coincidence of purpura rheumatica with renal hemorrhage, albuminuria, and gangrene of the soft palate. Cases are also on record in which there were cardiac involvement and grave disorders of other viscera. In HÆMOPHILIA, a disease occasionally of hereditary origin and characterized by the facility with which trivial traumatism of the body-surface are followed by incoercible hemorrhages, purpura may be the first signal of the predisposition. A young man with purpuric lesions of both lower extremities, but otherwise apparently in good health, presented himself at the dermatological clinic. There was at the time no suspicion of hæmophilia, but two weeks later as the result of a vaccination he bled continuously for eight days.

The disease occurs in both sexes, though more often in young women, and it is to a certain extent influenced by the changes of climate and season. Its diagnosis, in consequence of its marked characteristics, coincidence of petechiæ and ecchymoses with rheumatoid pains, is readily effected. Duhring calls attention to the danger of confounding the disease with the macular syphiloderm, the lesions of which, however, when relatively recent, fade under pressure.

The prognosis is in general favorable, though the condition may persist for long periods of time, and may, in rare cases, terminate fatally. The final result depends naturally upon the constitutional affection with which the purpura is associated.

Purpura Hæmorrhagica (**MORBUS MACULOSUS WERLHOFFII**; "LAND-SCURVY").—This disorder is usually ushered in with phenomena of a febrile character, accompanied by symptoms of general depression. Subsequently ecchymoses appear upon the extremities and the trunk, both spontaneously and at points at which the integument has specially been subjected to pressure and friction. Often petechiæ appear simultaneously upon the nasal, laryngeal, buccal, and other mucous surfaces, which may also be the seat of exhausting hemorrhages, resulting rarely in fatal collapse. A symptomatic fever is usually awakened. The disease occurs equally in the robust and the feeble of all ages, and, though commonly a sporadic affection, it may assume an epidemic form. *Purpura hæmorrhagica* is slow in its course, but, as a rule, terminates favorably after the lapse of several months. In some instances the general symptoms are those of typhoid fever; and hemorrhage from the mucous surfaces, including those of the stomach and intestines, may be severe. In yet severer cases, to which the name **PURPURA FULMINANS** is applied, the symptoms are those of septicæmia or of other acute and severe infection. In these cases extensive internal hemorrhage may be followed by death. Many of the severer cases of hemorrhagic purpura are undoubtedly due to infections the exact nature of which is not understood.

The lesions commonly appear first on the upper extremities, then over the trunk, and finally over the lower extremities. They are usually dark red or purplish in hue, varying in size from that of a pin-head to that of a bean, but they may be of the size of the palm.

Hemorrhagic purpura is distinguished from *purpura scorbutica*, or "scurvy," by the absence of distinctive premonitory symptoms of the latter disease which always occurs among those suffering from improper alimentation, vitiated air, and lack of exercise.

Purpura Scorbutica (**SCURVY**).—This disorder is peculiar to those who are compelled to subsist for lengthened periods of time on improper diet, more particularly that from which fruit and fresh vegetables are excluded; to respire vitiated air; and to endure such confinement as precludes the possibility of duly exercising the body. The disorder is, hence, more common among sailors, prisoners, Arctic voyagers, and men similarly situated.

The cutaneous lesions are, as in so many other forms of purpura, preceded by an almost characteristic sense of languor and depression. One or several joints may then enlarge. There may be a distinct febrile action.

The hemorrhages which result resemble those of *purpura hæmorrhagica*; the cutaneous lesions are petechiæ, ecchymoses, and painful ecchymomata, usually first appearing on the lower extremities, that may fluctuate, open, and result in offensive ulcerations reaching to the bone. Simultaneously with the cutaneous eruptions the gums become involved, showing tumid, hemorrhagic, or ulcerative fungosities, smeared with a dirty yellowish secretion, and having a fetid exhalation. The subcutaneous connective tissue, muscles, fasciæ, and viscera become involved. The disease is accompanied by febrile and other general phenomena of asthenia, and, when the causes are persistent, results

fatally. It is, however, remediable by proper treatment, though convalescence is usually tediously prolonged.

Etiology.—It is evident that the causes of purpura must vary with the constitutional disturbances upon which it depends. Direct infection is undoubtedly the cause of many hemorrhagic purpuras. Letzerich, in 1889, recognized in the spots of purpura hæmorrhagica long bacilli, cultures from which injected into rabbits produced a purpura with stuffing of the hepatic capillaries by colonies of the same microorganism. Other investigators have since found micrococci or bacilli in the lesions of purpura hæmorrhagica or in the blood. These organisms have been cultivated and the disease reproduced in rabbits, dogs, and guinea-pigs by inoculations with pure cultures. The purpuras occurring in typhoid and other specific fevers are evidently due indirectly to infection. Other purpuras are evidently toxic in origin, as in drug-ingestion (particularly after the administration of potassium iodide), anæmia, cachexia, etc.

The influence of the nervous system in the origin of many purpuras is unquestionably important. Purpura may occur in the course of various functional and organic disorders of the nervous system. It has followed severe neuralgia, over-exertion, sudden fright, a fit of anger, and other violent emotions. By many authors the rheumatic purpuras are considered neurotic in origin. Osler suggests that the purpuras, together with urticaria, angioneurotic œdema, and erythema multiforme, may depend upon "some poison—an alkaloid, possibly the result of faulty chylipoietic metabolism, which in varying doses in different constitutions excites in one urticaria, in a second peliosis rheumatica, and in a third a fatal form of purpura."

Pathology.—The hemorrhage occurs chiefly in the corium, but also at times in the subcutaneous tissue. The corium shows collections of red blood-corpuscles, and later variously sized granules of blood-pigment which is slowly absorbed, producing the color-changes characteristic of purpura. The pigment may be wholly absorbed in a few weeks or persist for years. Evidences of inflammation are present in some cases, there being dilatation of the papillary vessels, with some œdema and perivascular infiltration of leucocytes. In a few instances endothelial proliferation and endarteritis have been noted.

Wilson, Fox, and others have recognized lardaceous or inflammatory changes in the vascular walls, with embolism or thrombus in others. Watson Cheyne¹ and others have found some of the capillaries in the neighborhood of the hemorrhages plugged with bacilli, and colonies of the same in the effused blood. Leloir found in a single case coagulated fibrin adhering to the walls of a number of vessels of the skin.

Examinations of the blood have shown irregular variations from normal in the number and form of the blood-cells and in the quantity of fibrin. Micro-organisms have been found in many cases. These examinations, however, have not thrown much light on the pathology of purpura.

Treatment.—The treatment of these various forms of cutaneous

¹ Brit. Med. Jour., September 1, 1883, p. 416.

hemorrhage depends upon the nature of the cause in each case. If this be found and removed, no other treatment may be necessary. In general it may be said that internally the use of ergot, of ferric chloride or other salt of iron, and of quinine is advisable. Oil of turpentine, plumbic acetate, and dilute sulphuric acid have all been employed at times with marked success, at others without avail, in the treatment of these cases. Hypodermatic injections of ergotin, 1 part to 2 of distilled water, repeated every second day, have been followed by favorable and rapid results. A generous diet, the use of wine, malt liquors, and even spirits, and a strict observance of the demands of hygiene, are often essential methods of relief.

In the way of local treatment the gums often require an application of rhatany, 1 part of the extract to 50 or 60 of lotion; or equal parts of tincture of cinchona and tincture of myrrh, diluted as required.

Rest in the recumbent position is advisable, and in severe cases is imperative. If hemorrhage be actually in progress, the free use of hæmostatics will be required, with local application of ice. For those who are convalescent from systemic disorders accompanied by purpuric lesions of the lower extremities, resorption of the extravasated blood may be hastened by the local application of stimulating spirit-lotions with friction; and the pressure of the blood-column may partly be relieved by elastic bandaging of the extremities.

The **Prognosis** has been given, as far as might be, in connection with each disorder named.

CLASS IV.

HYPERTROPHIES.

LENTIGO.

(Lat. *lens*, a freckle.)

(FRECKLES, EPHELIS. Ger., SOMMERSPROSSE.)

Symptoms.—This condition is due to excessive and irregular deposit of pigment in the skin, producing the pinhead- to bean-sized spots of circinate or of irregular outline, frequently grouped and even confluent, which spots are commonly designated as “freckles.” They are most frequently seen symmetrically distributed on those parts of the body ordinarily exposed to the light and heat of the sun and to atmospheric influences, such as the face, the neck, and the backs of the hands in persons of both sexes. In those individuals whose bodies are to a greater extent similarly exposed they occur upon the chest, the back, and over the extremities. In other persons they may be seen upon parts not thus exposed, such as the penis, the scrotum, and the inner surfaces of the thighs, a fact which indicates that freckles are not always the result of the operation of the agencies noted above. They vary in color from light yellow, salmon, or red to the deepest brown; and are most noticeable in those having red hair and a delicate skin. Freckles occur rarely in infancy, partly, perhaps, on account of the infrequency of outdoor exposure in tender years. They are usually seen first about the age of six to eight years. They are commonly observed in mulattoes, individuals of a race particularly disposed to anomalies of pigment-distribution. Once developed, the lesions may persist through life without marked alteration; or may fade with each recurrence of the season of winter; or in milder cases may disappear. They usually share in the atrophic changes of old age, and, when persisting to that period, may then spontaneously disappear. They are not the source of subjective sensation.

Etiology.—Freckles are unquestionably produced and aggravated at times by the action of the light and heat of the sun, as common experience suggests; but it is evident that these forces must act upon a susceptible skin. Of a hundred sailors exposed in precisely similar situations on a long cruise, some of the number will uniformly be “tanned” and others deeply “freckled.” Attention has been called to the occasional occurrence of lentigo in the protected parts of the skin. Exposure to sea-air and fog, with obscuration of the sun, is sufficient to produce the result.

Pathology.—Freckles are due to an increased deposit of pigment in definite areas of the rete mucosum of the epidermis, never in the corium. The pigment accumulates densely in and about the prickle-cells, which become apparently softer and lose their spines at a later stage. Unna divides pigmentations of the skin into two classes: hæmosiderosis (due to granules containing iron); and melanosis (due to pigments in which the presence of iron has not been determined). In lentigo no iron-reaction has been recognized. Lassar urges, with strong probability, that there is always a congenital predisposition to these pigment-formations that requires certain external conditions for development.

Treatment.—The treatment of lentigines is that of chloasma and other pigmentations of the surface. Wertheim, of Vienna, advises:

R	Hydrarg. ammon. muriat.,	gr. lvj;	3/75	
	Bismuth. magister.,	gr. liij;	3/50	
	Ungt. glycerini,	ʒj;	30	M.

Sig. To be applied every other night.

Bulkley employs :

R	Hydrarg. chlor. corros.,	gr. vj;	4	
	Acid. acetic. dilut.,	f ʒij;	8	
	Boracis,	ʒij;	2	66
	Aq. ros.,	f ʒiv;	120	M.

Sig. To be applied night and morning, at first with gentle brushing; afterward by rubbing.

Hardaway touches each freckle with a rather stiff needle connected with the negative pole of a galvanic battery, and he finds the results satisfactory.

Most of the methods employed by charlatans for the removal of freckles depend for their success upon thorough blistering of the surface. Inasmuch as by this process the epidermis is removed, it is evident that the pigment of its cells is also removed with it, and the new epidermis is for a time free from blemish. But in all such cases the ultimate result is a deeper and more persistent pigmentation than that which was previously visible.

CHLOASMA.

(Gr. $\chi\lambda\omicron\tilde{\alpha}\varsigma\omega$, to possess a greenish color.)

Symptoms.—In this affection the skin is either diffusely discolored in various shades, or the maculations occur in patches larger than those of lentigo, fairly well defined, and irregular in contour, the so-called "liver-spots." In color they vary from a scarcely perceptible staining of the skin that requires a strong light for its detection, to a deep-yellow, a yellowish-green, a chocolate-brown, or a blackish shade (MELANODERMA). They may be idiopathic or symptomatic in character.

The idiopathic varieties of chloasma are produced by all externally operating agencies, in consequence of which an undue afflux of blood

is persistently determined to any portion of the skin. It is largely from the blood that the pigment is derived, hence the stains produced by the pigment are, to a certain extent at least, proportioned to the hyperæmia, stasis, or extravasation of the vascular fluid. Among these externally operating agencies may be named pressure and friction (as over the part covered by the pad of a truss); traumatism (as after the severe scratching of the skin affected with lice, eczema, or scabies); heat (as in diffuse "tanning" of the face, or "sunburn" following exposure to the solar rays); and the toxic or irritating effect of externally applied substances, such as mustard, capsicum, cantharides, and other articles capable of producing either vesication or pustulation of the skin-surface. Persistent or even permanent pigmentation of the skin upon the face, shoulders, and bosom, especially of young women, may be produced by the repeated application of such topical medicaments.

The symptomatic varieties of chloasma are the result of disorders either systemic or those involving the internal organs. They occur as either circumscribed or diffused, localized or generalized, spots, mottlings, stainings, or "masks" of the skin, and they vary in color from the lightest to the darkest shades. One of the most common, and at the same time the most marked of these varieties, is

CHLOASMA UTERINUM, so called because of its frequent association with certain physiological or pathological conditions of the uterus, both among married and single women. Thus, in pregnancy, sterility, hysteria, chlorosis, ovarian disorders and tumors, and functional derangements of the uterus there can be observed at times a facial discoloration extending equably over the forehead and reaching nearly to the line of the hairs at the scalp, in the form of a faint or a decidedly reddish-yellow or deep-brownish tinge. At other times the discoloration is macular and asymmetrical, involving the eyelids, the cheeks, the lips, or the chin. When the chloasma assumes the mask-like form it is usually most pronounced over the forehead, but it may involve the whole facial region, being less distinctly defined below than above. Similarly, the well-known changes occur in the areola of the nipple, along the linea alba, and about the external genitalia.

CHLOASMA (or MELANODERMA) CACHECTICORUM is another of the symptomatic pigment-disorders, characterized by changes in the color of the integument of the subjects of tuberculosis, syphilis, cancer, chronic alcoholism, malaria, and other disorders. Its hue varies between a faintly defined yellow to a deep chocolate.

ADDISON'S DISEASE, formerly thought to be due exclusively to lesions of the suprarenal capsules, is of the same nature, and is characterized by a peculiar bronzing of the skin. Overbeck and Greenhow have shown that the capsules may be destroyed wholly without changes in the skin-color resulting. The pigmentation may be general or be partial, and in the latter case is without definite lines of demarcation. It is commonly most pronounced over the face and neck, the scrotum, the groins, the axilla, and the nipple and areola. The hairs become coarse and dark; and dark or grayish-brown patches are at times visible over the mucous surface of the lips, the gums, and other parts of the mouth. The bronze or mulatto-like color of the

skin is intensified by stimulation or erosion of the cutaneous surface, and by exposure to light. In these cases there are generally marked asthenia and a feeble pulse, with anorexia and other signs of gastrointestinal disorder. When the result is fatal there may or may not be recognized pathological alterations of the suprarenal capsules.

The pigment when examined furnishes no iron-reaction.

Hadra, of Berlin, reports a case of Addison's disease cured by extirpation of a small apple-sized tubercular neoplasm of the retroperitoneal glands. A suprarenal capsule was contained in the growth.¹

Among the cutaneous disorders capable of producing skin-pigmentation may be named scleroderma, lepra, angioma pigmentosum et atrophicum, eczema (especially *e. venis varicosis*), and general exfoliative dermatitis.

From all the above-named discolorations, which are due solely to deposition in excess of coloring-matters normally existing in the skin, it is necessary to distinguish the various dyschromiæ which are owing to the introduction into the integument of coloring substances, either supplied by other portions of the body or foreign to it. Thus, in ICTERUS the bile may color the skin from a light-yellow to a dark-chrome shade, the duration and severity of the cutaneous symptoms depending upon the nature and gravity of the hepatic disease. This condition is frequently accompanied by pruritus in various grades of severity, the exact causes of which are obscure.

CHLOASMA FROM INGESTION OF ARSENIC.—The administration of arsenic in full doses for relief of nervous disorders in adults and children is frequently followed by a characteristic dull-brownish or dirty-colored discoloration of the skin of the neck and chest. In connection with these arsenical pigmentations, which are in some instances obstinate and generalized, may occur palmar or plantar keratoses, as well as those appearing elsewhere, which may be the starting-point of an epithelioma.

ARGYRIA.—A bluish, bluish-gray, slate-colored, or bronzed coloration of the skin may result from ingestion of silver nitrate. Argyria is most commonly the result of the administration of the drug in the treatment of epilepsy, but it is said to have also resulted from the topical application of silver-crayons to the throat, to the conjunctivæ, and even to the skin. Under what form the silver produces this effect, whether as an albuminate or other salt, is not known. The deposition, however, occurs in the form of minute particles of the metal in the connective tissue of the derma. The discolorations are most evident upon the parts of the skin exposed to the light, as the face and hands; but the chest and the lower extremities may be similarly stained. The connective tissue of the viscera is at times also involved, showing thus that the action of light is not essential to the production of the dyschromia. Two cases are reported as relieved by the administration of potassium iodide.

TATTOOING.—By the process of tattooing mineral and vegetable substances are directly introduced into the corium by means of needles,

¹ Medical Week, Paris, Oct., 1896.

for the production in the skin of various devices in colors. Individuals whose entire integument has been thus artificially covered with figures of different patterns by tattooing with indigo, vermilion, and cinnabar, are from time to time publicly exhibited. The results are indelible. Post mortem these pigments have been discovered not only in the derma, but also in the lymphatic ganglia nearest the site of their introduction.

ANOMALOUS DISCOLORATION OF THE SKIN AND THE MUCOUS MEMBRANES.—Bruce¹ describes the case of a harness-maker, the general surface of whose body, especially the skin of the face and of the extremities, as well as the mucous surfaces, underwent a noteworthy change of color. The hue acquired was a deep and uniform cyanotic shade. The symptoms in this case are believed by some to have resulted from the employment of nitrate of silver.

Pathology.—The lentigines, ephelides, and chloasmata are all due to excessive deposit of the natural pigment of the body in the rete musosum of the epidermis. Restoration of the normal color of the skin is usually proportioned to the extent and depth of the deposit, but the process is always very gradual. It can well be studied in the slow bleaching of the pigmentation of syphilitic cicatrices upon the lower extremities. In the dyschromias due to the introduction of coloring-matters foreign to the body or foreign to the skin the corium and the subcutaneous connective tissue are commonly stained.

The origin of the pigment in the skin being still undetermined, pathologists are unsettled as to the question whether migratory pigment-conveying cells are responsible for the change of color in the skin or whether the pigment-granules themselves migrate. Kaposi, Järisch, and a few others believe that pigment is formed in the rete. Unna believes there are two distinct kinds of pigment, not however fully differentiated, formed in the corium and carried through the lymphatic spaces to the rete. Ehrmann,² after much careful investigation, states that there are special pigment-cells, or "melanoblasts," which are formed in the embryo from the mesoderm. These cells perpetuate themselves, being thus independent of all other bodies, and are connected by long processes or threads of protoplasm, along which the pigment flows in a viscous state. The cells obtain their pigment from the hæmoglobin of the blood. All pigment outside of these cells he considers hæmatin-detritus. In some of these cases there is no change in the walls of the blood-vessels and there are no signs of blood-extravasation.

Diagnosis.—The diagnosis of cutaneous pigment-hypertrophies is readily effected by observing the persistence of the discoloration under pressure; the absence of all symptoms of hyperæmia, inflammation, and secondary changes in the skin, as also by the characteristic shades of color presented to the eye. In tinea versicolor there is usually slight furfuraceous desquamation, and the existence of a vegetable parasite is readily demonstrated by the microscope. The rare pigmentary syphilide is usually seen upon the neck and shoulders of infected women

¹ Internat. Atlas of Rare Skin-diseases, 1892, vol. vi., 2 and 7.

² Bibliotheca Medica D. II., Part VI., W. G. Fisher & Co.

in the form of yellowish to brownish maculations, often arranged in an irregular network. The lesion is, indeed, one of the symptomatic chloasmata.

Treatment.—In all the symptomatic pigment-anomalies the indications for treatment are presented by the disease which begets the cutaneous disorder.

The local treatment of both the idiopathic and symptomatic varieties of the affection demands the use of external applications which will hasten the physiological reproduction of the epidermis, substituting thus new and unpigmented for old and pigmented epithelia. This process must also be accomplished without the artificial production of such an hyperæmia as will tend to add to the very coloration which it is attempted to relieve. The substances used for the slow accomplishment of this end are borax, sulphur, tincture of iodine, potassium and sodium hydroxides (including the soaps of these alkalies), and the mercurials. None of these substances is more generally employed than corrosive sublimate, which constitutes the basis of most of the cosmetic lotions sold in the shops.

The following formulæ are given by White¹ for use in the evening. The preparation in each case should be left upon the affected surface during the night, and be removed by a soap-and-water washing in the morning. They are to be used for weeks in succession, but only after a cautious preliminary testing of the sensitiveness of the skin to their action. To avoid the possibility of error, the practitioner would do well to order a poison-label upon all vials containing the sublimate :

R	Hydrarg. am. chlor., }	āā 3ij;	āā 8	M.
	Bismuth. magister., }			
	Amyl., }	āā 3ss;	āā 15	
	Glycerin., }			
R	Ammon. murat.,	3ss;	2	M.
	Aq. Colognien.,	f 3j;	30	
	Aq. dest.,	Oss;	240	
R	Hydrarg. bichlorid.,	gr. vj;	4	M.
	Acid. mur. dil.,	f 3j;	4	
	Glycerin.,	f 3j;	30	
	Alcoholis, }			
	Aq. ros., }	āā f 3ij;	āā 60	
	Aq. dest.,	f 3iv:	120	

The following formulæ for ointments are given by Kaposi :

R	Hydrarg. ammon., }	āā 3ss;	āā 15	M.
	Sodæ biborat., }			
	Ol. rosmarin.,	gtts. x;	66	
	Ungent. simpl.,	3j;	30	
R	Acid. boric., }	āā 3j;	āā 4	M.
	Cer. albæ., }			
	Paraffin.,	3ij;	8	
	Ol. amygd. dulc.,	3j;	30	

¹ Lot. cit.

Van Harlingen recommends :

R	Hydrarg. chlor. corros.,	gr. vss:	4
	Zinci sulphatis,		
	Plumbi subacetat., }	āā 3ss;	āā 2
	Aq. dest..	f3iv;	120
Sig. Lotion, for external use, morning and evening.			

Other measures advised are: stimulation with alcohol, and application, for several hours after, of a plaster of ammoniated mercury; 2 parts of magnesium carbonate and zinc oxide, 4 parts of pure kaolin and glycerin, and 10 of vaselin; chloroform, 100 parts, chrysarobin, 15 parts (Leloir); hydrogen peroxide; diluted acetic, carbolic, muriatic, and nitric acids; 1 to 2 parts of salicylic acid, in paste or powder, to 20 parts of base; and solutions of mercuric chloride in collodion, 1 part to 30, employed with great caution.

The rapid removal of pigmented patches is accomplished, in Vienna, by covering the part with strips of linen dipped in an aqueous or an alcoholic solution of corrosive sublimate of the strength of 4 grains (0.26) to the ounce (30.), with which solution the dressing is also occasionally moistened. Vesiculation is usually accomplished in about four hours, when the serum is evacuated by puncture, and the detached epidermis is covered with any inert dusting-powder. The resulting crusts fall in about eight days. The procedure is attended with danger of producing in the end the precise deformity which it seeks to remedy, a danger explained above.

Another method of removing tattoo-marks and pigmented nævi, successfully employed by French dermatologists, consists in tattooing the region, previously rendered aseptic, with a solution of 30 parts of zinc chloride to 40 parts of water. If properly done, the resulting inflammation is slight, and after a few days there forms a superficial crust which remains about a week and then falls, leaving a slight scar which becomes almost imperceptible. This method calls for skill and care in its application in order to obtain good results and to avoid supuration and deep cicatrization.

The internal administration of potassium iodide, recommended for the removal of argyria, has often failed.

Prognosis.—The prognosis is in all cases uncertain. There is strong reason to believe that the local treatment of these dyschromias is, in the long run, ineffective. Those methods which effectually and brilliantly accomplish the desired end are almost invariably followed by deeper pigmentation than that which it was attempted to remove; those operating more slowly have, probably, a less speedy, but scarcely more disguised sequel. It is likely that local treatment of these pigmented states will ere long be abandoned. The treatment intelligently directed to the cause of each discoloration is that which in the end proves most satisfactory.

KERATOSIS.

(Gr. κέρας, a horn.)

The term Keratosis was first applied by Lebert to hypertrophic lesions of the epidermis. It has since been made to include changes in both the epidermis and the corium, and it is employed by some authors in a generic sense to embrace a number of both localized and general hypertrophies of these portions of the skin.

KERATOSIS PILARIS.

(LICHEN PILARIS, PITYRIASIS PILARIS.)

Symptoms.—This condition may be a mere temporary functional disturbance of the skin, awakening no subjective sensation, inappreciable by the patient and apparent only to the careful observer, or it may constitute a disease. Its symptoms are the occurrence of pinhead-sized, pointed elevations of the skin-surface that may be described as papules, though, strictly speaking, they are not such, but are constituted by an accumulation of horny epithelia and a small quantity of inspissated sebum about the lanugo-hairs of the extensor surfaces of the extremities and trunk. These aggregations of material are usually of a dirty-whitish or grayish hue, and are pierced by a lanugo-hair implanted in the follicle about which the abnormal condition exists. Occasionally, however, the hairs are of the finer and shorter kind, and are often coiled in or otherwise covered by the little heaps of epithelial debris. The skin of the individual thus affected is generally harsh, squamous, and dry to the touch; being also, in the majority of cases, long unwashed. The color of the quasi-papules differs also with the complexion of the individual; at times the papules have a distinctly reddish tinge, and they are often surmounted by a scale.

Keratosis of this type can scarcely be described as a morbid state. Those who seek treatment for it are readily divided into two classes: first, comely young women desiring to exhibit bare arms in evening toilet; second, young men suffering from the delusion that they are victims of a "disease of the blood" or of syphilis. Viewed as a whole, the subjects of the best types of this so-called "disease" are men and women of exceeding vigor, with firm, well-developed muscles and shapely limbs.

Keratosis pilaris is common in skins long uncleaned by ablution, and this condition can thus be produced artificially. In some individuals it persists for long periods of time, and awakens no concern. In others, especially in children, it speedily becomes the source of pruritus, and each lichenoid papule may then be transformed into an urticarial wheal, with distinct and sometimes very annoying pricking and tingling sensations, the trouble being at once relieved by a bath in warm water with soap. In still other individuals, especially in adults, an exaggerated form of the disease can be recognized, the skin presenting a roughness to the touch suggestive of the surface of a nutmeg-grater, and exhibiting numerous fine, conical, grayish, horn-tipped filaments,

which several dermatologists are disposed to regard as a form of ichthyosis. In the latter case there is doubtless a true hypertrophy of the epidermis. In the former case there is scarcely more than a mechanical accumulation of effete organic material. There can be little doubt that the malady, simple though it be in character at the onset, may become the first stage of a series of chronic cutaneous disorders. Tilbury Fox has reported four cases, in which the disease was well marked, under the title of *CACOTROPHIA FOLLICULORUM*, this name being employed to designate its peculiarities as to wide distribution over the body, its implication of the deeper portion of the follicles, and its congenital history. In these cases the reddish tint of the lesions is distinctly shown.

Brocq, who devotes an extensive chapter to this affection, describes a white variety, the uncolored circumpilary papules being scattered over the arms, forearms, legs, and thighs, usually on the outer faces of the extremities, and three inflammatory types: (a) a mild form, in which reddish papules are disseminated among those of the "white" class; (b) a form of medium intensity, in which the papules are generally rosy-red in hue; (c) an intense form, in which well-marked lesions occur over the surface of the chest, the lumbar and pubic regions, and the folds of the larger articulations.

Keratosis pilaris on the face, as described by French writers, is characterized by exceedingly minute, usually conical, occasionally obtuse papules (each pierced by a fine hair) that develop over the brow, about the eyebrows, over the cheeks, and the inframaxillary region.

Etiology.—Puberty and uncleanness have been assigned as causes of the disorder; both conditions may in some patients be indirectly effective. In certain individuals the condition seems to follow a prolonged course of arsenic. The disease is seen frequently in persons having peculiarly thick, coarse, usually dark-colored skins, and also possessing marked muscular vigor and unusual development of most of the other bodily tissues. In brief, the disorder seems to be due often to marked inherited predisposition in persons of vigorous constitution. The varieties of keratosis pilaris seen in cachectic hospital-patients, and in persons who have aggravated the disease by inducing a medicamentous rash upon the person, belong to a different category. Patients in the two classes last named may be so perfectly relieved that there is no predisposition to a return of the disorder, a relief not always to be secured by the others.

Pathology.—Keratosis pilaris is produced by accumulation of the cells of the horny layer of the epidermis and sebaceous material about the orifices of the hair-follicles. In some cases the result is an irritation which produces a mild grade of chronic inflammation of the periglandular tissue. Giovanni in twelve cases examined found atrophy of the hair-papillæ. Entire absence of sebaceous glands in three-fifths of his cases, and very marked atrophy in the remainder, were noted also. Necrosis of the outer end of the arrectores pilorum was observed in a few instances.

Diagnosis.—The disease should readily be recognized by the peculiarities of its seat, its course, and the nature of its symptoms. From

ichthyosis it can be distinguished by the limitation of its lesions to the orifice of the hair-follicle; from the transitory condition known as "goose-flesh" by its persistence after the surface of the skin is thoroughly warmed; from papular eczema and the other lichenoid eruptions by the relatively insignificant character of the lesions, their evident follicular origin, and either the entire absence, or mild chronic type, of inflammatory symptoms.

The disease is to be carefully differentiated from pityriasis rubra pilaris, in which the characteristic disorder of the scalp, the appearance of plaques of disease covered with fine pityriasic scales (often upon the tip of the nose and chin), exhibiting a peculiarly dark, smirched appearance, the affection of the nails, the characteristic papulæ on the dorsal surfaces of the first and second phalanges of the fingers, and the evident admixture of the disease with symptoms of seborrhœic type, suffice to determine its nature.

Though the lesions of keratosis pilaris bear little resemblance to the papular syphilodermata, many male patients for years swallow medicaments for relief of a supposed syphilis the sole "symptom" of which is a keratosis pilaris. The papular syphilodermata are not persistent year after year, are not throughout symmetrical, and are not limited largely to the outer faces of the limbs, especially of the thighs. They are preceded by a history of infection, and invariably are accompanied by some other manifestations of the disease. They are not limited to the orifices of the hair-follicles, and are not capped by the peculiar horny scaling tip of the papule of keratosis pilaris.

Crocker describes a LICHEN PILARIS which he considers distinct from keratosis pilaris, as in the former the follicular elevations are more pronounced and resemble spines, there is usually evidence of inflammation, and the eruption tends to occur in patches instead of being diffuse.

Treatment.—For the subjects of this disorder in its typical forms it is not sufficient merely to order a bath. The bathing should be conducted systematically for years at a time.

As soon as it can well be tolerated the patient should be urged to bathe the entire surface of the body every morning by the use of the sponge and cold fresh or salt water, following this with brisk friction with a coarse towel or a flesh-brush. The habitual use of this cold bath continued daily for years, in persons who can tolerate it (and patients affected with keratosis pilaris are usually of this class), accomplishes results of the most satisfactory character, exerting, as it does, a profound influence on the nutrition and healthfulness of the skin.

For immediate treatment of the most of these cases, however, the hot bath with soap is desirable. This bath may be repeated as often as required to remove the lesions, and be followed in the more urgent cases by inunction with lanolin-pomades, or the fats or oils. Salicylic acid, 1 to 10 per cent. in oils or ointments, is effective in removing temporarily the horny accumulations. In the congenital and severe types, such as those described by Fox, cod-liver oil internally should be ordered.

KERATOSIS SENILIS.

The skin of the aged may become harsh, dry, and unusually cornified either diffusely or in certain definite regions, such as the hands, feet, or extremities; this may be regarded as the simplest form of keratosis senilis. The skin of the entire body or of the region affected is then dark in color, dry to the touch, occasionally covered with fine, rather adherent scales, representing merely attached and cornified cells of the horny layer of epidermis, and notably unprovided with the natural unguent of the skin.

In a more advanced grade the skin undergoes changes closely allied to epithelioma; often, indeed, these both furnish the first symptoms of epithelioma and coexist with its gravest destructive effects. The skin, more commonly of the face, the hands, or the forearms, less often of the feet, the legs, and the genital regions of the aged, is covered with thin, horny, often greasy-looking, pinhead- to nail-sized and larger, dark-yellowish plates or scales, between which the integument that has undergone the atrophic changes in the senile skin is visible. Pigmented puncta and macules may also appear scattered irregularly over the surface, with rough, dirty-yellowish to dark-brownish granular accumulations upon the skin of certain regions, such as the clefts beside the alæ of the nose, the temples, etc. The appearance is suggestive in some cases of a seborrhœa sicca of the face. In many patients exhibiting these features a fully developed papillomatous, superficial, or deep epithelioma may be present. In other patients one or more varieties of the senile wart may be visible, as described in the chapter on Verruca.

Viewing the subject of senile keratosis in the light of the knowledge had upon the subject to-day, it must be admitted that the boundary-lines between it and epithelioma are not well established. Unquestionably the exaggerated lesions of the former affection are frequently the first stages of the latter disease, and in the treatment of the skin of the aged, conducted on the general principles already set forth, the physician should never lose sight of possibly serious consequences in one or more regions of the skin affected.

KERATOSIS FOLLICULARIS.

(PSOROSPERMOSIS, PSOROSPERMOSE FOLLICULAIRE VÉGÉTANTE, ICHTHYOSIS FOLLICULARIS, ACNÉ SEBACÉE CORNÉE, DARIER'S DISEASE.)

In 1889 Darier¹ and Thibault in France; White in America; and later, Wickham,² Neisser, and others, called attention to a cutaneous disorder not previously distinguished from other maladies. Between twenty and thirty instances have been recorded. In reporting a new case Bowen³ gives a brief summary of the clinical and pathological characteristics of the disease as described by other observers.

¹ Annal. de Derm. et de Syph., July, 1889.

² Contribution à l'Étude des Psorospermoses Cutanées. Paris, 1890.

³ Jour. Cutan. and Gen.-Urin. Dis., June, 1896.

In the few cases reported the eruption displayed was practically generalized, and was exhibited in greatest abundance over the limbs, the front of the chest, the inguinal and genital regions, the scalp, the face, and the loins. The first lesions were firm, pinhead-sized papules, scarcely different in color from that of the surrounding integument, which later assumed a deeper hue, and, whether flattened or hemispherical, these papules were soon covered with a grayish or brownish crust, greasy to the touch and apparently prolonged into depressions beneath, much as the crust of *seborrhœa sicca* of the face is sunk within the orifices of the sebaceous follicles. The papules, as they increased in size and age, became darker in hue until eventually they were a deep brown and red, or even purple. A few exhibited scratch-marks and were covered with hemorrhagic crusts.

Over the scalp the symptoms are practically those of the crusting forms of *seborrhœa*, save that there is no tendency to loss of hair. Over the face the parts chiefly involved are the temples, the inside of the concha of the ears, and the folds about the nose and lips. Here, as over the parts of the trunk named above, form dark, even blackish, strata of dirty oil-crusts, spontaneously shed. Beneath each crust, as indicated above, there is usually a conical spur let into an infundibular depression, the latter representing the patulous orifice of a pilo-sebaceous gland. Over the backs of the hand and fingers the papules and crusts are less numerous, but the papules are closely set together and tend to coalesce. In the palms and soles are numerous almost imperceptible lesions of the same type. As the disease advances to what has been described as a second stage the papules coalesce, forming small tumors and papillomatous growths, which involve not only the follicles, but also the interfollicular tissues. Many of the follicles become the sites of superficial ulcers, while the whole of the vegetating mass is bathed in a more or less abundant, fluid, muco-purulent secretion. The subjects of the malady often emit an offensive odor.

The disease progresses gradually until large portions of the body are covered. Occasionally exacerbation with rapid spreading of the lesions occurs; but, as a rule, the course of the affection is slow and the general health of the patient does not seem to suffer except secondarily from the presence of ulcerating and suppurating lesions of the skin.

Etiology.—Little is known definitely regarding the etiology of *keratosis follicularis*. In the majority of cases recorded it began in childhood, and in several instances in early infancy. Of twenty cases collected, thirteen were in males and seven in females.

The theory first advanced by Darier, and later elaborated by Wickham and others, that this variety of *keratosis*, and probably also Paget's disease, some superficial forms of *epithelioma*, and *molluscum contagiosum*, were due to the presence of *psorosperms* or *coccidiæ*, has been abandoned even by its propounders. As a result of further study by Bowen, Buzzi, Miethke, Boeck, Darier, and others, these bodies, which closely resemble certain *psorosperms*, have been demonstrated to be produced by cell-transformation.

White's cases were in father and daughter, while Boeck had three

cases in one family. It is possible that contagion or heredity may have an influence in the production of the malady.

Pathology.—The disease seems to be primarily a *kyperkeratosis* involving the sebaceous follicles and the hair-follicles. The process is confined for the most part to the neck of the follicle, but in the later stages it extends to the interfollicular tissues. The mouths of the pilosebaceous ducts are dilated into funnel-shaped openings and packed with masses of horny cells produced by the hyperkeratosis. Boeck and a few other observers believe, however, that the process is not essentially follicular, but that it may begin outside the ducts.

The rete is usually thickened and in the later stages of the disease the interpapillary processes are prolonged. Mitoses are numerous, and in the lower layers of the rete are found fissures or lacunæ, the exact significance of which is not yet determined. In places the pressure of the horny masses may produce thinning and atrophy of the rete. About the borders of the lesions there is an abundant pigment-deposit in both the epidermis and in the corium. The only other change noted in the corium is a small amount of cellular infiltration. The glands of the skin are unaltered.

The round bodies formerly supposed to be *psorosperms* are found in the deeper and middle layers of the rete, and at the base of the horny plug filling the follicle. According to Bowen, they are swollen cells containing a nucleus which stains deeply, and which is surrounded by a clear or hyaline ring of protoplasm, outside of which is a zone containing granules of keratohyalin, the whole being surrounded by a homogeneous, glistening membrane, which may possess a double contour. Various modifications of this type are found as a result of irregular keratinization of the cells. In the upper layers, in which the process of cornification is advancing, the keratohyalin gradually disappears; but it may do so irregularly, and, losing its granular appearance, may give rise to appearances closely simulating nuclei and nucleoli. In the upper layers also the outer membrane may contract or disappear, leaving an empty space. At the bottom of the horny mass in the follicle the stratum granulosum is frequently absent, and there are seen irregular, shrunken, homogeneous cells with nuclei which stain but feebly. These cells are the "grains" of Darier, and Bowen believes they are cells which have become cornified without passing through the keratohyalin stage.

Diagnosis.—The disease is to be differentiated from *molluscum epitheliale*, which is never so generalized, and which always exhibits an enucleable mass containing the so-called "molluscous bodies." The papular forms of acne are eruptive elements which contain centrally a true corneous mass; in *keratosis follicularis* there is a softish comedo-like central mass. The acne-forms, further, are not generalized. The disease bears close resemblance to some forms of *ichthyosis*, but a careful study of the history, the character, and location of the lesions will usually make the diagnosis clear.

Treatment.—So few cases of the disease have been observed that the treatment is still undetermined. While marked improvement may be obtained, no complete recovery has been reported, and with a lapse

in treatment the unfavorable condition of the patient quickly returns. The parts are to be well cleansed by shampoos, and then dusted with borated, salicylated, and absorbent powders. The French, acting upon the parasitic theory of the nature of the affection, vigorously employ parasitocides, salves containing pyrogallol or iodoform, and even resort to cauterizations with zinc chloride.

KERATODERMIA PALMARIS ET PLANTARIS.

(SYMMETRICAL KERATODERMIA OF THE EXTREMITIES, CONGENITAL KERATOMA OF THE PALMS AND SOLES, ICHTHYOSIS PALMARIS ET PLANTARIS.)

A symmetrical and well-marked thickening of the palmar and plantar epidermis occurs as a result of several effective causes to which special attention has been directed, in France by Besnier and Doyon ; in Germany by Unna ; and in the United States by one of the authors¹ of this treatise in a communication, in 1887, to the American Dermatological Association.

Symptoms.—Four varieties have been identified :

In the first variety there is symmetrical thickening of the palms and soles, strictly congenital, in cases hereditary, and accompanied or not by *nævi* situated upon other regions of the body. The epidermis of the involved areas is greatly thickened and a delicate erythematous halo extends beyond the border of the keratosis. The latter condition occasionally sweeps beyond the palmar and plantar regions to the dorsum of the affected fingers, toes, hands, or feet. The nails, the teeth, and the hair are not involved.

The second group includes the more common variety of symmetrical keratoderma of the extremities, erythematous in type and possibly associated with a central neurosis. Here the epidermal thickening is exaggerated over the points of special pressure, though occurring independently of such agency, a fact well illustrated in a case in which the thickening at times developed while the patient was for months reclining in a hospital-bed. The disorder is worse in winter. There are the usual hyperæmic zone at the border-line of the keratosis, and a great distinctness of definition of the latter with perfectly sound skin between the islets of epidermis sclerosed at the points of pressure. There are usually a coincident hyperidrosis, and dislocation of and structural change in the nails. The keratinized sole or palm sheds its horny envelope either as a result of treatment or spontaneously ; and even in the most pronounced cases the disorder may disappear.

In a third form there are foci in which the keratosis is declared in multiple isolated points over the palmar and plantar regions, always independently of pressure and contact, due to a central trophoneurosis. The remote cause in some cases is the long-continued ingestion of arsenic. In a subvariety the orifices of the sweat-pores are distended with corneous plugs, resembling comedones, with concentric lamellations.

A fourth variety is a partial, entirely curable, and accidental kerato-

¹“Observations on Three Cases of Symmetrical Hand and Foot Disease,” *Med. News*, Oct. 8, 1887.



Keratosis Punctata in a Man who had been taking
Arsenic for a long-standing Psoriasis.

(From a photograph.)



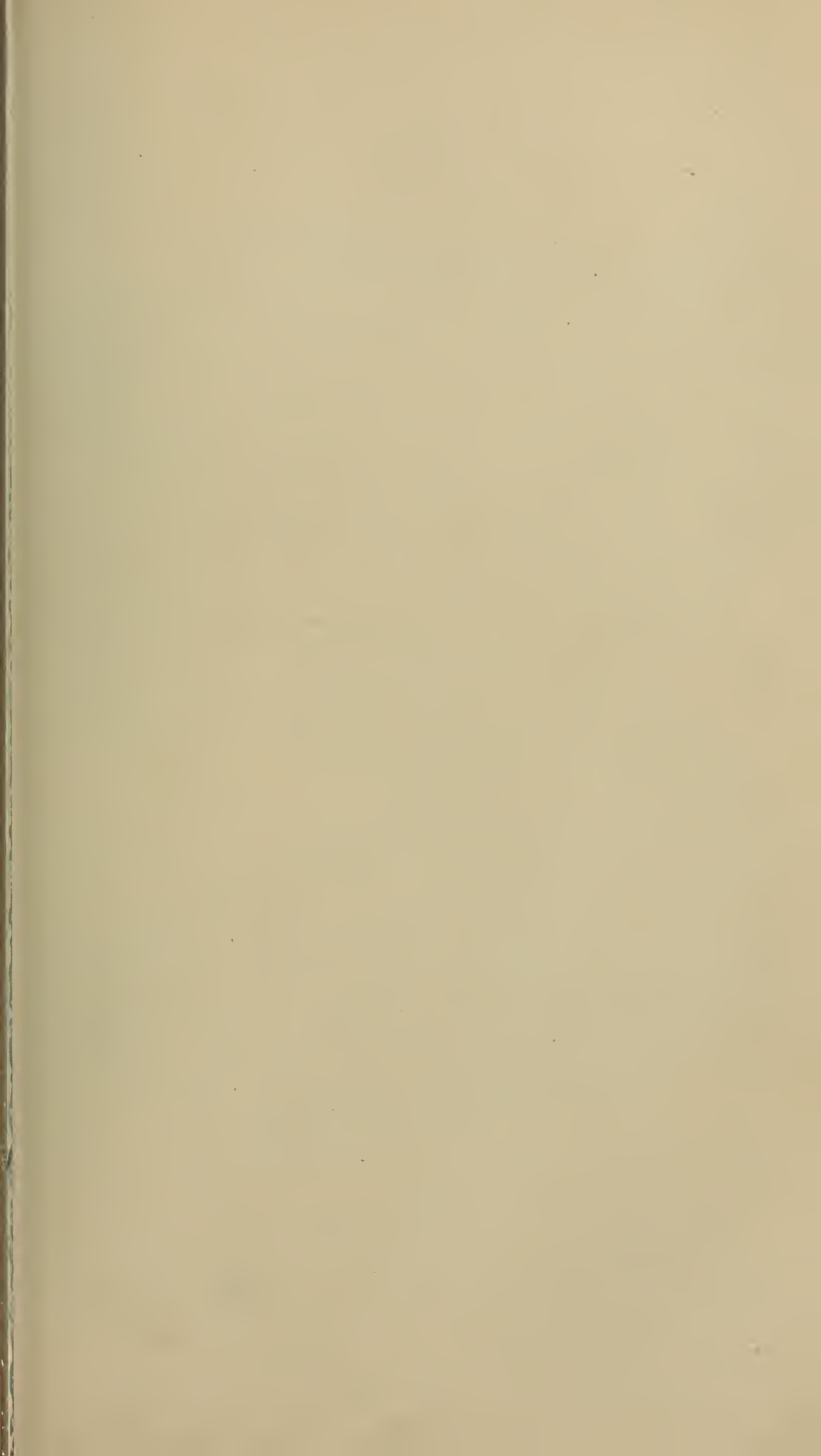


PLATE IX.



Palmar Keratosis, due to Arsenic.

(From a photograph.)

dermia of the extremities that is not to be confounded with the callosities described in another chapter. This form occurs at any age under the influence of pressure to which the limbs are unaccustomed.

The **Diagnosis** of all forms of keratosis of the palms and soles is to be made from eczema, chiefly by reason of the absence of well-marked inflammatory symptoms, of vesicles, and of eczematous patches in other regions of the body. Palmar and plantar syphilides are to be distinguished with great caution. These last may be asymmetrical, especially if of "late" type; may exist where there is often a history of infection or signs of lues; and may often ulcerate. They have also well-defined circinate borders; and the lesions are more often multiple and isolated.

Treatment.—Internal treatment is by the methods employed in psoriasiform affections. Brocq advises the internal administration of sodium arseniate in large doses; but in this connection it should be remembered that cases are reported in which keratosis of the palms and soles has apparently been produced by a long course of arsenic. The local treatment is by prolonged maceration of the parts, followed by shampoos with green soap in substance or tincture, followed by salicylated pastes, plasters, or solutions of salicylic acid in collodion. Mercurial plasters and mercuric oleates may also be used with advantage. Potassium hydroxide in 10 to 20 per cent. strength has been applied as a lotion to stimulate the surface. Other formulæ recommended are salicylic acid and calomel, 1 part of each to 20 parts of glycerole of starch; and 1 part each of resorcin, tartaric acid, and salicylic acid, to 20 or 30 parts of the salve-basis.

ANGIOKERATOMA.

(KERATOANGIOMA.)

This disorder was first described in 1889 by Mibelli;¹ later, cases of a similar character though differing in many details have been reported by Thibierge, Crocker, Zeisler, Pringle, Joseph, Fordyce, Cottle, and others. The cases are rare and they apparently occur with wide divergence of type.

Symptoms.—The lesions may be first recognized upon the hands, where they resemble ordinary perniones, and are seated on the dorsal aspect of the fingers, especially of individuals who are much exposed to low temperatures or who handle cold substances in the trades, as, for example, those who dress cold beef in winter. Both the palms and the soles may be invaded. We have had under observation a typical case in which the lesions existed exclusively on the scrotum. Other instances of angiokeratoma of the scrotum are on record by Fordyce and others. Here, as over other regions of the body involved, the lesions may be commingled pinhead-sized and larger, translucent, horny-capped, roundish warts, tumors, or nodules, dull purplish in color, leaden-hued, or even chocolate-tinted, interspersed with flat macules (split-pea-sized for the most part, having a dark central punctum), which are at first removable by pressure and which event-

¹ Giorn. Ital. delle Malattie Veneree, e della Pelle, September, 1889.

ually persist. These lesions are often mere cutaneous varices. The globoid nodules may be smooth and horny at the surface or be roughened and prickly; they are never scaly. At times the varicosities of vessels are commingled with both spots and nodules, transitional forms occurring in some cases. The arrangement of the lesions is in general irregular and asymmetrical, though there may be grouping.

Etiology.—The patients are commonly young, but a few cases have been reported in middle-aged subjects. There is usually a history of exposure of the affected parts to cold weather or to cold substances, as described above. Some of the sufferers from the disorder seem to have been subject to chilblains.

Pathology.—The first morbid change is a blood-stasis which results in punctiform capillary varices in the upper vascular web of the corium. Superimposed on these varicosities lie thickened areas of the epidermis, constituting a keratomatous tumor. The epithelial ridges in the vicinity of these minute wart-like bodies are compressed and thinned by the ectasis of the vessels. There is moderate local acanthosis, the granular layer also being increased in thickness and the lower part of the stratum corneum showing increase in eleïdin. At the moment of fullest evolution the affected papillæ are transformed into small cavernous angiomata, sometimes reaching upward to the epidermis, while thinned processes of the latter stretch downward toward the cutis. The sweat-pores are at times narrowed; at others they seem to be normal.

The **Prognosis** is favorable, as the lesions may be made to disappear under proper treatment.

Treatment is by stimulating lotions and liniments, as in *pernio*, and, when required, by electrolytic destruction of the vascular warts.

KERATOSIS FOLLICULARIS CONTAGIOSA.

(ACNÉ SEBACÉE CORNÉE.)

H. G. Brooke¹ described under this title a rare and apparently contagious disorder occurring in children and occasionally in adults. Blackish macules were symmetrically developed into deeply pigmented papules over the neck, the shoulders, and the extensor faces of the arms. From these papules protruded blackish specks, which later resembled comedo-plugs and eventually developed as spike-like filaments. The skin, however, was dry, never greasy, of a dirty shade of color; and the thorny excrescences were firmly attached to the tissue beneath. We have had under observation a young woman who exhibited precisely the same features on the extensor surfaces of the arms, forearms, thighs, and legs. Unna divides the pathological symptoms into those due to retention and those due to the formation of horny plugs at the sites of the follicles. The lesions are distinguishable from those of acne and comedo by the absence of sebaceous cells and by their collar of horny lamellæ at the base. The spokes are produced by the energy of the hyperkeratotic process, which pushes the horny plug outside of and beyond the follicle, its upper segment only being concerned in the process. The disease is essentially a hyperplasia of the epithelial cells, the first evi-

¹ Internat. Atlas of Rare Skin-diseases, 1892, xxii.

dence of the operation of the external cause being apparent in the stratum granulosum, the chief result being declared in the common excretory duct of the pilo-sebaceous conduit. The disease was readily relieved by applications of lard saponified with potassium hydroxide.

HYPERKERATOSIS STRIATA ET FOLLICULARIS.

H. v. Hebra¹ reports under this title the case of a young woman with isolated epidermal elevations, having a reddish margin, of both superciliary arches, over the bridge of the nose, the upper lip, the throat, shoulders, and arms. The lesions were flat or elevated, isolated or confluent nodules, constituted of heaped-up epidermis, which could be removed without disturbing the papillary layer of the corium. Many were bean-sized, grayish-green elevations, conspicuous over the elbows, with underspreading epidermic cones buried in corresponding depressions beneath, which often bled freely when the cuticular mass was removed. Contrasting with these lesions were striated elevations of epidermis extending either at an angle or along the longitudinal axis of the limb. The disorder was relieved by warm-water and soap baths, followed by resorcin-vapor and salicylated plaster.

PARAKERATOSIS SCUTULARIS.

This name has been given by Unna² to a rare condition occurring in a vigorous man (first on the scalp), in which thick, somewhat greasy crusts enveloped bundles of hairs, the separate filaments having yellowish and horny cuffs that were fused with the crust. Whitish scales and horny cylinders with a perpendicular projection were visible over several portions of the face. Upon parts of the trunk were brownish spots, coin- to palm-sized, exhibiting horny cones which projected from the follicular orifices. The cones were covered with horizontally placed scales. Dark-reddish, moist, and shining surfaces were exposed on their removal. Closely examined, the horny cones after removal displayed several hairs which projected, one above another, from each cone, having been extruded from their follicles at different times. The author believes the disease to be allied to Devergie's pityriasis pilaris.

POROKERATOSIS (Mibelli).

(HYPERKERATOSIS EXCENTRICA (Respighi)).

This rare form of hyperkeratosis, described by Mibelli,³ Respighi,⁴ Hutchins,⁵ Gilchrist,⁶ and others, begins as a minute, elevated, wart-like papule which gradually enlarges peripherally to form a small plaque

¹ Internat. Atlas of Rare Skin-diseases, 1891, v.

² Ibid., 1890, i.

³ Ibid., 1893, vol. ix.; Monatshft. f. prakt. Derm., 1897, p. 345, etc.

⁴ Giorn. Ital. delle Malattie Veneree, e della Pelle, 1893, p. 356.

⁵ Jour. Cutan. and Gen.-Urin. Dis., 1896, p. 373.

⁶ Johns Hopkins Hosp. Bull., viii.; Jour. Cutan. and Gen.-Urin. Dis., 1899, p. 149 (with bibliography to date, etc.).

with a depressed centre and a characteristic, narrow, slightly elevated border, in the form of a "dike" or "raised seam," along the crest of which is a depressed black line or series of black dots. This crest may be continuous or be broken at intervals, or may be surmounted here and there by small conical elevations. This peculiar ridge inclosing a depressed centre can be made out in lesions that have attained a diameter of two millimetres or more. Many of the lesions do not reach a size greater than one centimetre in diameter, but some become much larger and may cover the greater portion of an extremity. The smaller plaques are circular, but the larger ones may have an irregular and sinuous outline.

Within the border the surface in small lesions is depressed but callous, while in the larger areas it usually is thinned and atrophic, but may be of normal thickness, with sometimes a few small round horny elevations superimposed. Absence of hair and of perspiration is noted in some of the areas, while in others both are present. There are no evidences of inflammation, and as a rule no subjective sensations. Some of the lesions may fail to attain typical development and exhibit a border but slightly elevated in which the furrow is the most conspicuous feature; or they may appear as flat horny or scaly disks.

The disease began in most instances between the second and eighth year of life, but in one of Respighi's cases it first appeared at the age of twenty-eight years. The lesions develop slowly, and may be limited for years to one region. The disks may be single, but usually are multiple and may be very numerous. They occur in any region of the body, including the mucous surfaces. We have seen the disease in typical development on the glans penis.

The causes of the disease are not known. Bacteriological investigations have given negative results. Gilchrist's eleven cases occurred in four generations of one family. Two other families are reported in which there were two or more cases of the disease.

Pathologically the disease is a hyperkeratosis beginning in the deeper parts of the horny layer or in the upper portion of the rete, and involving chiefly the sweat-ducts, but also the hair-follicles and sebaceous glands. No inflammatory changes are found.

Treatment of the smaller lesions with the electrolytic needle has been successful. Those which are larger may be excised. Recurrence after curetting was reported in one of Gilchrist's cases.

MOLLUSCUM EPITHELIALE.

(*Lat. molluscus*, soft.)

(**MOLLUSCUM VERRUCOSUM, MOLLUSCUM SEBACEUM, EPITHELIOMA CONTAGIOSUM, MOLLUSCUM CONTAGIOSUM** (Bateman), **ACNÉ VARIOLIFORME** (Bazin).)

Molluscum epitheliale, a disease first recognized in 1817 by Bateman, under the title Molluscum Contagiosum, is to be distinguished from another, known for a long time as molluscum fibrosum. The two disorders are distinct, and are no longer to be confounded by a similarity in name.

Symptoms.—Typical epithelial mollusca are firm, roundish bodies, averaging in size the dimensions of a pea, and in color varying from a waxy whitish hue, nearly that of the integument, to the dark-red tint of injected masses. They are either imbedded in the skin or project from it in smooth, firm, semiglobular, sessile or pedunculated tubercles. Usually a dark-colored aperture can be detected at the apex or side of the lesion, from which, on pressure, milky and curd-like, semifluid contents can be made to exude. Occasionally, inspissated or even horn-like masses project from these orifices, as though forced out by a *vis-a-tergo*. The disease is rare, and the lesions are usually single and isolated, though hundreds may appear upon the person of one individual.

FIG. 51.



Molluscum epitheliale. (After ALLEN.)

They consist of semifluid collections derived from that portion of the rete which lines the sebaceous glands or penetrates between the papillæ of the derma; or they are actual transformations of the glands into cornified amorphous deposits, surrounded by thickened parietes. They may be removed by surgical procedures; or be shed spontaneously; or inflame, and result in circumscribed abscess; or terminate by ulceration. More often they are insidious and slow of development, and may persist for years without producing annoyance or subjective sensation. They occur on the face, the side of the neck (Fig. 51), and the nucha; on the penis and scrotum of men, and the breasts and labia of women; on the trunk; on the flexor surfaces of the extremities, and the dorsal surfaces of the hands and feet. They are most common in children.

In consequence of the depression of the centre of the little tumors (which Hutchinson has happily likened to small pearl buttons) they may suggest the lesions of variola, hence they were described by Bazin under the term Varioliform acne. This title, however, is by most writers employed to designate a totally different affection, a variety of acne vulgaris, to which a chapter is devoted in this work.

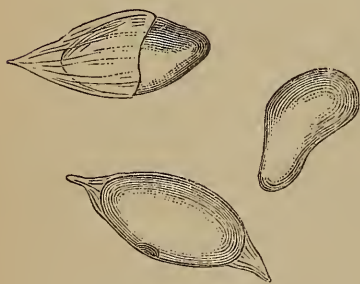
Hebra, Virchow, and Nicolaysen have reported mollusca as large as an orange or a small cocoanut. Microscopical examination of these gigantic lesions demonstrated their identity with the smaller tumors. Similar bodies of less size have been found interspersed among epitheliomata.

Etiology.—In England where the disease was first recognized, it is more frequent than on the continent of Europe. The contagiousness of molluscum is experimentally established, though the lesions are feeble in propagation by contact. Retzius, Vidal, Peterson, and Wigglesworth succeeded in producing the disease by inoculation of the contents of molluscous tumors. The proofs of contagion apart from experimental inoculation rest chiefly upon the circumstance of lesions being simultaneously or successively observed on the breast of a mother and the face of her nursling, and upon the successive development of mollusca in several members of one family. An interesting relation would seem to subsist between mollusca and verrucæ, or ordinary warts, which are supposed to be feebly contagious.

Stelwagon¹ has accumulated and classified reports of cases and of inoculations which seem to leave little doubt as to the parasitic nature of the disease. Eczema, sweating (Turkish baths), pruritus, and maceration of the skin predispose to the occurrence of mollusca; but there are insufficient grounds for assuming that in adults they are associated with venereal disease. They are not rarely seen in large numbers upon the scrotum of youths who have never exercised the sexual function.

Pathology.—Sections through the centre of a lesion of molluscum epitheliale show that it is formed by a number of diverging flask-shaped lobules, the small end of each lobule opening into a common central cavity. The lobules are separated from each other by a thin fibrous partition, which may occasionally be demonstrated to be the remains of a papilla. The entire mass or group of lobules is surrounded, except at the surface-opening, by a fibrous capsule, thus giving the entire structure an appearance very similar to that of a sebaceous gland. The belief, formerly held, that the process originated in the sebaceous glands, is erroneous. Minute examination fails to find any trace of a sebaceous gland in these formations.

FIG. 52.



Molluscous corpuscles.
(After KAPOSI.)

The process begins as a proliferation of epithelial cells in the lower layers of the rete. The growth is confined to the rete, from which the flask-shaped processes are pushed out,

¹ Jour. Cutan. and Gen.-Urin. Dis., February, 1895.

causing a flattening and more or less complete disappearance of the underlying papillæ.

Each lobule is lined with a layer of palisade-cells continuous with the same layer in the healthy rete adjoining the growth, and is filled with round and cuboidal nucleated epithelium undergoing peculiar changes. The first two or three rows of cells are usually normal, but above them the changes become gradually more marked. The exact nature, sequence, and signification of these changes are in dispute, but it would seem to be fairly well established that the outer part of the cell shows early in the process abundant granules of keratohyalin, and soon undergoes a cornification forming a clear ring or "capsule" for the cell. Within, the changes are similar to those seen in amyloid or colloid degeneration. Authors describe a granular condition surrounding the nucleus which is usually at one end of the cell, while the remainder of the cell-protoplasm shows vacuoles or groups of small, irregularly shaped hyalin bodies, uniting to form an oval mass which gradually encroaches upon and distends the cell. This oval homogeneous corpuscle surrounded by a horny capsule forms the so-called "molluscum body." These bodies accumulate at the mouths of the lobules and in the small common cavity into which the lobules all open, and may be pressed out upon the surface of the skin in a yellowish or whitish semifluid or waxy mass.

The more minute changes in the cells and the methods of recognizing them are given in detail by Unna and others. The theory that the disease is caused by psorosperms has been abandoned.

Diagnosis.—Mollusca resemble the lesions of variola more than any other cutaneous phenomena. They are, however, readily distinguished from the latter by their chronicity, their semifluid contents, the absence of febrile symptoms, and the career of variolous pustules. From warts they are also differentiated by their contents, hemispherical shape, and the dark punctum almost invariably present on one part or another of the lesion.

Molluscum epitheliale in no way suggests molluscum fibrosum, with which it has been confounded only in consequence of the similarity in name. The tumors of molluscum fibrosum are solid new-growths, usually occurring in great numbers upon the trunk of individuals of adult years. They may attain enormous dimensions, the masses reaching several pounds in weight; and though in cases they degenerate by ulceration, they never enclose the curdy contents of molluscum epitheliale.

Papillary warts are to be distinguished from mollusca, though without question lesions are occasionally seen of a type intermediate between the two forms. Warts are to be recognized by their general papilli-form character, and by their evident relation to the papillary layer of the corium overlaid by a thickened stratum corneum.

Physicians are occasionally consulted by patients who have discovered mollusca upon the genitals, and who suppose these lesions to be of venereal origin. An error in this respect can scarcely be committed by the expert. Neither the solid papule of the initial lesion of syphilis when observed on the skin of the penis, nor the pustule and resulting

ulcer of the chancreoid, ever exhibit the waxy look of genital mollusca with their depressed puncta. In such cases the inguinal glands should always be carefully examined, remembering, however, that a forcibly squeezed and cauterized molluscum may be accompanied by sympathetic adenopathy.

Treatment.—Molluscous tumors may be removed by ligature, scissors, knife, curette, or a needle in contact with the negative pole of a galvanic battery, their contents having previously been expressed. In order to diminish the pain of the trifling operation the affected surface may first be chilled or frozen with an ethyl-chloride or ether spray. Bleeding is easily arrested with a pledget of lint. Occasionally after removal the point of a crayon of silver nitrate may be introduced, either to check hemorrhage or to insure destruction of the cyst. According to Hebra, the return of the lesion, when this occurs, may be expected at situations previously not implicated.

When the lesions are small and numerous they may be made to exfoliate by the local application of green soap. Removal of the larger lesions may be followed by minute cicatrices.

Prognosis.—The disease can always be terminated by removal of the tumors, the process to be repeated in case of recurrence.

CALLOSITAS.

(Lat. *callus*, hard flesh.)

(KERATOMA, TYLOMA, TYLOSIS.)

Callosities are superficial, circumscribed, dirty-white, yellowish-white or darker, flattened, thickened, and horny patches of epidermis, dense in structure and usually insensitive. Section of a single plaque shows it to be largest at the centre and least at the periphery. Callosities vary in size from that of a finger-nail to that of a section of a hen's egg, being at times larger; they occur chiefly upon parts of the integument subjected to long-continued intermittent pressure, as the hands and feet; also upon parts stretched over osseous prominences, as those over the ischia. They may be complicated by hyperæmia, fissure, acute inflammation, or erysipelas; and readily serve as foci of cutaneous disease (eczema, psoriasis, etc.). They are commonly encountered among mechanics, carpenters, shoemakers, etc.; among persons wearing ill-fitting shoes (heel, or ball of foot, or big toes), stockings, or surgical apparatus; among workers in metals, acids, or heated substances; and among musicians (harpers, banjo-players, etc.). They are produced by such external causes as pressure, friction, chemical agents, and heat. They can readily be distinguished from eczematous, psoriatic, and ichthyotic patches, being always limited to the sites of external contact.

Callosities are so characteristic of the several professions and trades that by their locality alone they point in many cases to the occupation of the individual who exhibits them. Often they are, in these cases, essential to the prosecution of such work; and their removal would only expose a tender epidermis to the operation of an injurious pressure or friction.

The pathological features of callosities are: marked hypertrophy and compaction of the stratum corneum and thickening of the stratum granulosum, the rete mucosum on the contrary being thinned by the pressure. The papillæ are often flattened from the same cause. The corium may exhibit signs of inflammation when the callosity has been converted into a source of irritation.

Callosities require treatment only when they are sources of pain or of discomfort. They may be removed—surgically, by the knife; chemically, by the destructive action of acids or alkalies; rationally, by disuse of the part to an extent sufficient to interfere with the operation of the cause. When painful they may be poulticed. A nightly soaking of the callus with warm oil, kept in contact with the thickened epidermis during the hours of sleep by a compress of flannel saturated with the same substance, will in the end soften the induration.

CALLOSITAS OF THE HANDS, WITH UNUSUAL COMPLICATIONS (reported by Morison,¹ of Baltimore), is illustrated by the case of a negro who was a stoker. In this instance the combined effects of heat and friction resulted in ulcerations beneath the callosities that eventually produced necrosis and loss of some of the phalanges. This patient recovered as soon as the hands were properly protected, a fact that seems to justify the assignment of this and similar cases to a class apart from those which follow.

CLAVUS.

(Lat. *clavus*, a nail.)

(CORN. *Fr.*, COR, ŒIL DE PERDRIX; *Ger.*, HÜHNERAUGE.)

Corns are hypertrophies of the horny layer of the epidermis, with the peculiarity of presenting inferiorly a coniform prolongation, which, being pressed from without inward upon the sensitive papillæ of the corium, excites pain in various degrees. Corns vary in size from that of a pea to that of a large chestnut, and are dense and callous when occurring upon those prominent parts of the foot on which the boot, shoe, or gaiter exercises its greatest pressure. When occurring upon the lateral face of a toe in apposition with another the corn originates usually from pressure through the medium of the neighboring toes. It is then softer from exposure to heat and moisture. Corns are often weather-sensitive, being unusually painful before, during, or after the occurrence of storms, and should not be confounded with gouty or rheumatic deposits below the skin.

Histology.—Corns are composed of superimposed, and often concentrically arranged, layers of epithelium, between which are found at times minute hemorrhagic extravasations. They are occasionally seen upon the palms of the hands. At the periphery of the corn the corium is unchanged, but at the point where its central cone is pressed into the deeper structures the papillæ are either atrophied or absent. A corn

¹ Jour. Cutan. and Ven. Dis., Jan., 1886.

at the periphery exhibits, according to Unna, a thickening of the prickle- and granular layers. There is a central horny layer, the outermost stratum of which gives evidence of "welding." But the core itself, which is composed of compressed masses of the horny layer conically pointed below, exhibits a flattened ridge-net and papillary body. Often the sweat-pores are preserved, and may be traced running dilated and with many windings through the epithelium deeply into the core. The granular layer here disappears, and the general flattening is so great that the margin between the horny cells and the flattened prickle-layer is lost.

Treatment.—Corns, when rationally treated by disuse of the feet, or by the adjustment of properly fitted coverings for the same, will usually fall spontaneously. They may be softened by prolonged maceration in water, by poultices, or, best of all, by oil, as in the treatment of callosities. Erosion and excision may be practised, if demanded by an exigency. Where the sufferer must necessarily continue the use of the foot the simplest and best treatment is as follows: The part is thoroughly macerated for half an hour with water as hot as can be tolerated. Then the projecting callous portion of the corn is gently removed by cutting or scraping until, as nearly as may be, the surface is level with the plane of the adjacent skin. The part is then dried, and the entire surface, both of the seat of the corn and the adjacent integument, is completely covered with many narrow, short, and nicely adjusted strips of rubber-plaster. Burgundy pitch melted and painted over the part may be applied as a substitute for the plaster. When the trifling operation and dressing are complete the patient should bear firm pressure over the corn without flinching, and walk with comfort. The plaster remains until it separates spontaneously, which is usually in the course of a few days. The corn is then macerated at night with an oil-poultice, as described above, and the dressing afterward reapplied, usually the second time by the patient. Persistence in this course is followed by complete relief if the coverings of the feet be properly fitted. Caustics are usually unnecessary when there is no ulceration of the hard corn, and are in this situation frequent sources of great distress. They are chiefly valuable in the treatment of the soft variety, but they should always be applied with a skilled hand.

For this purpose acetic acid or the silver nitrate crayon may be employed. The proprietary "corn-salves" sold in the shops commonly contain the ointment of mercuric nitrate, which also is a useful application to the soft variety of corn. The latter should be protected by the interposition of absorbent cotton or wool from contact with adjacent toes.

As a rule, the ringed corn-plasters sold in the shops are inferior to the dressing with the rubber or salicylated plaster, made to cover the entire corn.

CORNU CUTANEUM.(Lat. *cornu*, a horn.)(HORN. *Fr.*, CORNE DE LA PEAU; *Ger.*, HAUTHORN.)

Cylindrical, conical, straight or twisted, angular and otherwise irregularly shaped and sized corneous eminences, single or multiple, occasionally project from the scalp, forehead, nose, lips, ears, penis, or extremities. The sites of preference are in the following order, the scalp, forehead, temples, nose, lower extremities, male genitals, and trunk. Horns are named from their resemblance to the similar appendages in horned cattle, but they widely differ from cattle-horns, which are always implanted upon osseous tissue. Human horns are formed of dense and massed columns of epithelia, often resting upon prolonged papillæ. Occasionally, on section, they exhibit the concentric arrangement of the epithelia seen in corns, but, unlike the latter, have re-entrant basal depressions into which the papillæ below pene-

FIG. 54.

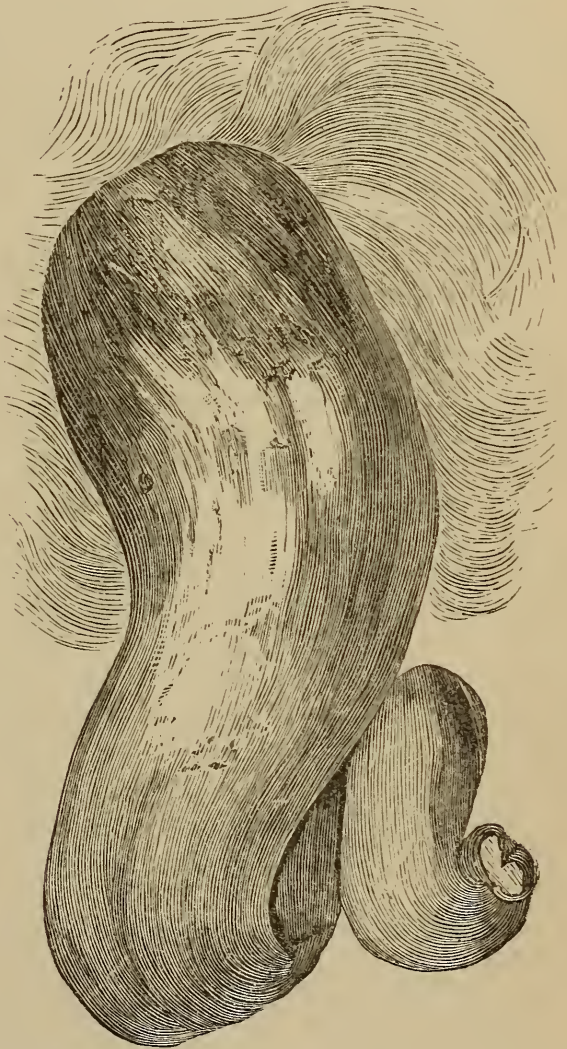


FIG. 53.



Varieties of cutaneous horns.

trate. At times they are implanted in a dilated follicle, in which case the glandular elements participate in their formation. At times, also, they represent a corneous transformation of the epithelia which constitute warts. They are seen in all colors, but are often between a yellowish brown and a brownish black, with fissured or wrinkled or longitudinally grooved exterior, like rough bark (Fig. 53). They

may be painless, or, like other keratoses, become the seat of inflammation in various grades. They may be short or several inches in length (Fig. 54). They may be shed spontaneously never to return, or may shortly reappear. They occasionally develop into epitheliomata.

Brinton¹ has exhibited an anteriorly curved horn one and seven-eighths inches long and three-eighths of an inch in circumference, removed by him from the glans penis of an elderly patient. Fourteen cases are on record of a similar growth in this situation. In the horn growing from the lower lip of an elderly man exhibited in 1886, at our clinic, the growth was longitudinally furrowed, and also at somewhat regular intervals transversely seamed, presenting thus the appearance of the joints of the sugar-cane.

The **Etiology** is without question that of the senile wart for most cases; though, as with epithelioma, horns occur in infancy. They have been recognized as starting from a sebaceous cyst.

Pathology.—Pathologically these hypertrophies are first developed either within a closed atheromatous cyst or from remarkably elongated papillæ of the corium. They are made up of cornified and hypertrophied epidermal cells. According to Unna, they are all papillary and medullated keratomata growing on a circumscribed warty base. The first stage of their development is characterized by a simultaneous acanthosis and hyperkeratosis, dense epithelial taps reaching toward the corium. In the second stage of horn-formation the keratosis advances and the acanthosis diminishes. Sets of horny wedges sink downward into the epithelial taps and ridges, fill the spaces between the papillæ, and are capped above by a horny cupola.

Lebert shows that horns develop into epitheliomata in about 12 per cent. of cases. As horns are really metamorphoses of epidermal cells similar in many features to warts, it is not surprising that the two often undergo the change from benign to malignant epithelial growths. In a few cases horns have developed to an appreciable degree on epitheliomata; but under the microscope this horny metamorphosis on a smaller scale may be recognized in a large number of epitheliomata situated on the back of the hands of elderly men who have been farm-laborers, sewer-builders, or workers in contact with earth.

Treatment.—Horns may be removed by extirpation, after which the surface upon which they were implanted should completely be cauterized.

Prognosis.—In formulating a prognosis the possibility of an epitheliomatous result should not be forgotten.

VERRUCA.

(Lat. *verruca*, an excrescence.)

(WART. *Fr.*, VERRUE; *Ger.*, WARZE.)

Warts are cutaneous excrescences; congenital or developing after birth; sessile or pedunculated; pointed or flat; smooth, rugous, or having a cauliflower appearance; pigmented in various shades or of

¹ Jour. Cutan. and Gen.-Urin. Dis., 1887, p. 272.

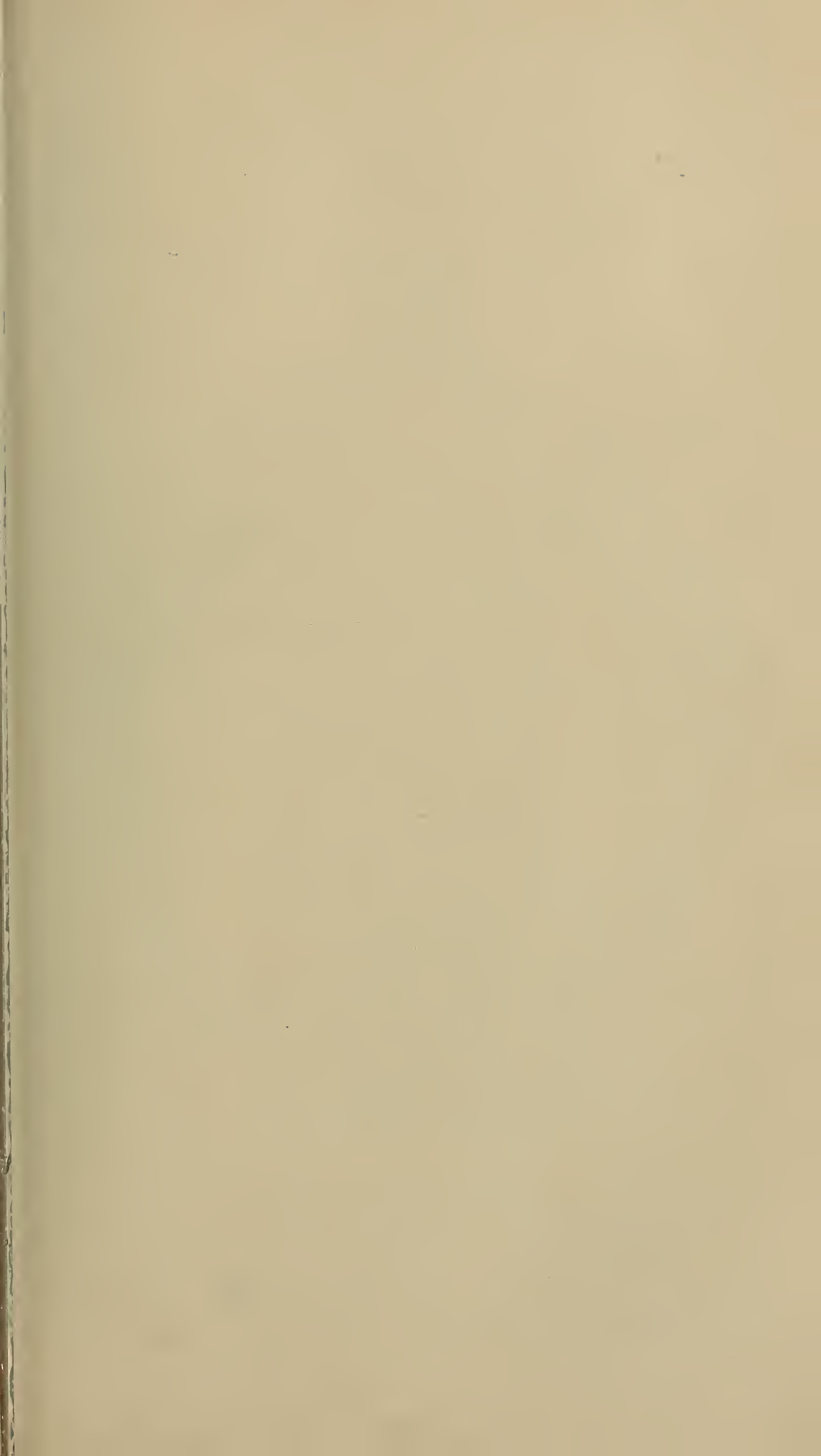


PLATE X.



Congenital Warts.

(From a photograph of one of the author's patients.)

the natural color of the skin; soft, dense, or even corneous to the touch. They may develop slowly or rapidly, and may persist for years or disappear without apparent cause. They may be single or multiple, and they occur upon the hands, feet, face, scalp, neck, genitals, and other parts of the body. They are usually discrete, but may be confluent and form palm-sized and larger elevated plaques. Fox, of New York, has reported a case in which warts occurred in the lines tattooed on the skin of a young man.

The several names given to the various forms of warts have chiefly a descriptive value.

VERRUCA ACUMINATA (Condyloma; Moist Venereal Wart. Ger., *Spitzen Warzen*) is a filiform, papilliform, or cock's-comb-like vegetation. They are single or multiple; at times hundreds coexist upon the genitalia and neighboring regions. In size they vary from that of a pin's point to that of a hen's egg, and may be larger. They are usually moist and secreting, being frequently covered with a puriform mucus of exceedingly nauseating odor. Upon the genitals they are encountered upon the glans, around the frenum, and over the prepuce of men; and in women about the clitoris, labia, ostium vaginae, and anus. They are usually of a bright-red color in these situations. When occurring upon the integument they are firmer, drier, and exhibit a tendency to luxuriant growth. In this form they may be recognized about the axillary regions, the umbilicus, the interdigital spaces of the feet, and even the face. They may cover the side of the chin.

The summit of these warts may be tufted, acuminate, or flattish; on the surface of the skin, unconnected with mucous membrane, they may have the color of the unaltered integument. They are often minute and numerous as well as multiple and large; or they may be single throughout, though, as a rule, they multiply when untreated. Their largest maximum development is observed in negroes, in whose persons they may attain unusual proportions. There was lately exhibited at our clinic a male negro with a compound venereal wart of the penis that was of the size of an orange.

These warts are almost always the result of exposure of the sexual parts to venereal secretions (blennorrhagic, syphilitic, leucorrhœal, etc.), and, though observed in virgins, are decidedly rare in individuals of both sexes of that class. In pregnancy they often attain a large size and rapid development, but, as a rule, disappear when parturition is completed. They are contagious and furnish auto-inoculable secretions. Cocci and bacilli have been recognized in several varieties, thus explaining many otherwise obscure histories.

VERRUCA ACQUISITA is a term used to designate lesions developed after birth.

VERRUCA CONGENITA.—Congenital warts are usually first noticed several months after birth. They may be single or be multiple, usually the latter, in which case they are arranged along the lines of distribution of the nervous trunks, the disposition of the lesions often suggesting the arrangement displayed in zoster of the trunk or other region. They are, as a rule, roundish, slightly pigmented, and scarcely larger than split pea. At times they acquire unusual dimensions.

The neck and shoulders may be well covered with lesions of this class in asymmetrical groups, the largest wart having the size of the section of an egg.

VERRUCA FILIFORMIS.—This variety of wart differs somewhat from the others, not only pathologically, as is noted below, but also in its clinical features. These warts are pointed growths, slender, thread-like, often pedunculated, usually covered with a smooth and apparently unaltered epidermis; they occur upon the face, neck, eyelids, chest, and ears. Kaposi concludes that they are minute fibromata.¹

VERRUCA DORSI MANUS ET PEDIS (Unna) is a nævus with lesions symmetrically grouped upon the dorsal surfaces of the metacarpal of the thumb and index finger. The lesions are flat, round, or polygonal, two to six millimetres in diameter, externally presenting a punctate appearance, occurring in middle or later life, and exhibiting no tendency to spontaneous change. Pathologically they disclose a distinctive thickening of the prickle-layer from the periphery to the centre. They lack many of the characteristic microscopical features of the ordinary seborrhœic wart.

VERRUCA GLABRA is distinguished by its smooth surface.

VERRUCA NECROGENICA is a tuberculous wart, occurring on the hands of persons who have been in contact with tubercle-bacilli, chiefly as a result of handling the bodies of the dead. For details, the chapter on Tuberculosis of the Skin should be consulted.

VERRUCA PLANA describes a not uncommon variety of wart which is flat, smooth, and but slightly elevated. The plane warts may be single, but are commonly multiple, and they usually vary in size from that of a pinhead to that of a small split-pea, but may be much larger. They are often grouped, and may have a polygonal outline, closely simulating the papules of lichen planus. In young people these plane warts are usually small, multiple, often grouped; have the color of the normal skin or are slightly yellowish or whitish; and are seen most frequently on the forehead, on other parts of the face, and on the backs of the hands. In older people this form of wart shows less tendency to grouping than in the young, is often pigmented, and may be associated with or form the beginning of superficial epithelial changes.

VERRUCA SENILIS VEL PLANA (KERATOSIS PIGMENTOSA).—These warts are bean- to coin-sized, smooth, softish growths developed upon the face, trunk, and extremities of persons of advanced years. They are flat, usually pigmented, and have a granular aspect. They are readily separable by the finger-nail, and are then found to rest upon a reddish granular base. As the result of external injury (caustics, traumatism) they may become the starting-point of an epithelioma.

VERRUCA VULGARIS is the form most frequently seen upon the fingers and hands, as pinhead- to pea-sized, usually discolored, papilliform excrescences.

Etiology.—Most warts are nests of micro-organisms of different varieties. The precise cause, however, is unknown; but in early childhood, a period in which warts are most frequently encountered, it is

¹ See Taylor's observations as epitomized in the chapter on Fibroma.

reasonable to conclude that they result from external contacts. It is when the child begins to handle everything within reach that they usually first appear, and then about the hands. Acuminate or condylomatous warts chiefly occur in parts moistened with a blennorrhagic secretion, but unquestionably they may originate from contact with leucorrhœal or pathological, non-venereal discharges from the female genitals. Senile warts are more probably due to obscure changes in the nutrition of the integument. The etiological importance of the cocci and bacilli which many of them furnish cannot be determined at this time.

Pathology.—The process begins with downward and upward growth of the rete-cells, resembling in this respect benign epithelioma. The granular layer is remarkably thickened, while the greatly hypertrophied horny layer is less compact than normal owing to imperfect keratinization of the cells, in many of which the nucleus is still apparent. The descending rete-processes are usually pointed and turn toward a common centre, producing thus a shallow cup-shaped depression in the cutis.

The papillæ beneath the wart are flattened, many being obliterated, except a few at the centre of the base. These hypertrophy, become elongated, and with their dilated vessels form a vascular "core" for the verruca. In the pointed forms the connective-tissue and vascular elements are marked, while the horny layer is but slightly hypertrophied. In verruca plana the chief change is in the rete, the horny layer being but little thicker than normal.

Diagnosis.—It is a matter of importance to recognize the fact that many epitheliomas begin as warts; therefore the verruca of those advanced in years should always be examined and treated with a view to this fact. A tendency, especially in the aged, for the lesion to break down into an ulcer should arouse suspicion. Warts on the face and the backs of the hands of the aged are often of this class.

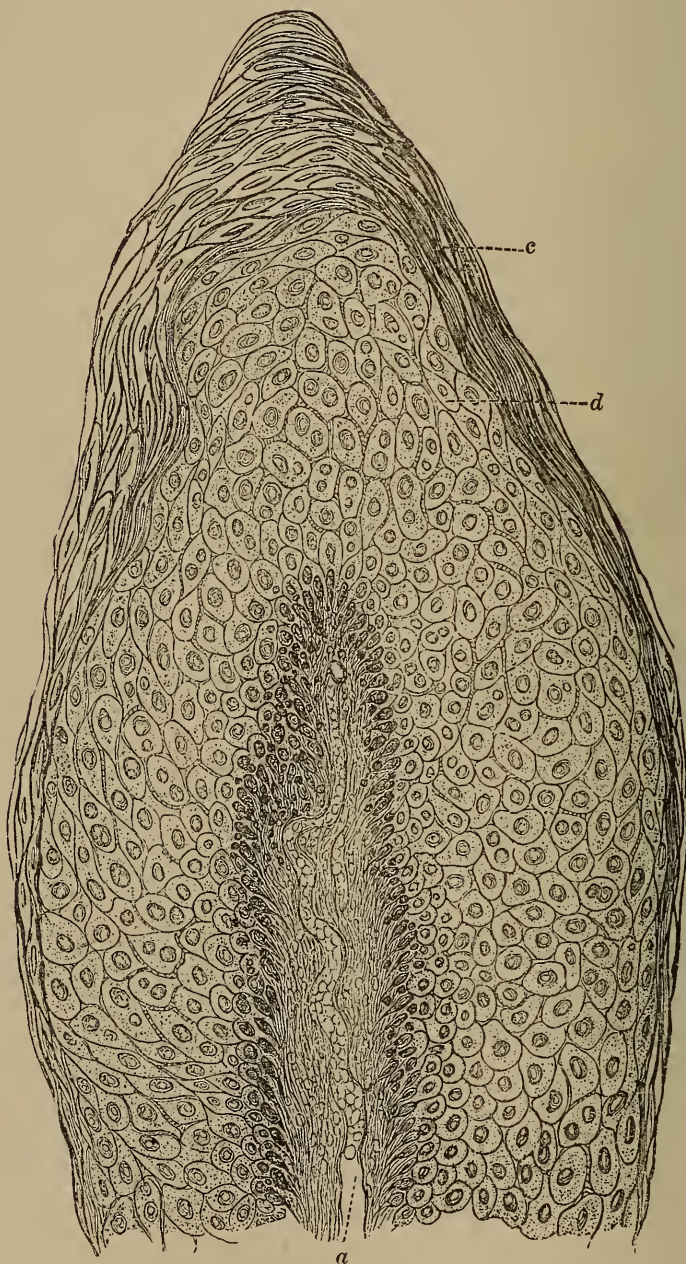
Another class of warts are tuberculous in character, and, whether occurring in the young or the aged, are the result of infection with tubercle-bacilli, a generalized tuberculosis at times originating in these lesions (*vide* Tuberculosis Verrucosa).

Great care must be had to distinguish the moist variety from syphilitic condylomata. In the latter there is usually a history of contagion with other syphilodermata upon the surface, such as mucous patches, palmar lesions, or papules of the face. Fibroma, or molluscum fibrosum, generally occurs in tumors of greater number, firmer consistence, and larger size. The tumor of molluscum epitheliale greatly resembles a wart, but the waxy-whitish appearance of the lesion and its dark punctum at one plane or another sufficiently distinguish it. In exceptional cases verruca plana may in shape and grouping closely simulate lichen planus, but the location and history, together with the absence of the typical color, the varnished appearance, and of the itching, characteristic of lichen planus, will make the diagnosis clear.

Treatment.—Warts may be removed by excision, erosion, or caustics (silver nitrate, alkalies, acids, ferric chloride, corrosive sublimate,

etc.). The larger growths upon the genitalia that are often highly vascular may demand the prior application of a ligature when they are pedunculated. Even the slender filiform warts will be found to contain a small vessel in each pedicle that requires cauterization after excision.

FIG. 55.



Vertical section of the summit of a pointed wart: *a*, papilla containing vascular loop; *c*, stratum corneum; *d*, hypertrophied rete. (After KAPOSI.)

When the warts cannot more readily be removed by the knife or by curved scissors the Paquelin cautery may be used. The blackened eschar which is left prevents hemorrhage, serves as the best subsequent dressing, and is less likely to be followed by a return of the growth. In some cases it is a useful expedient to transfix the lesion in several

directions with the long needles used in gynæcological practice, previously dipped in a 50 per cent. solution of chromic acid.

One may also transfix the base of the wart a sufficient number of times with a needle connected with the negative pole of a galvanic battery, the positive pole being connected with the body of the patient by the aid of a moist sponge.

The formula according to which are made several of the proprietary "wart-cures" sold in the shops is as follows :

R	Acid. salicylic.,	3ss ;	2	33	M.
	Cannabis Indic. extr.,	gr. v ;			
	Collodion.,	3ss ;	15		

Sig. To be painted over the wart with a camel's-hair brush.

For small multiple warts Morris recommends the following :

R	Glycerin.,	3jss ;	6	10	M.
	Acid. acetic. dil.,	3ijss ;			
	Sulphur. præcipit.,	3j ;	4		

For patches of warts Van Harlingen recommends cautiously attacking one part at a time with the following paste :

R	Pulv. acid. arseniosi,	gr. vj ;	40	M.
	Ung. hydrarg.,	} aa q. s. ad 3ij ;		
	Emplast. hydrarg.,			

Warts may also be treated by painting once daily with a saturated solution of potassium bichromate in boiling water. The liquid is applied cold. The application is painless and leaves no scar (Louvel-Dulongpre).

For warts not requiring operative removal local treatment generally answers well. Those about the genital region often disappear if persistently washed with a solution of tannin in alcohol, 1 drachm (4.) to 3 ounces (96.), after which they are dried and thoroughly dusted with boric acid, or salicylic acid with lycopodium, or burnt alum and rosin, or, what is most popular, dry calomel. Alum- and lead-lotions may also be substituted for the tannin and alcohol, and for a time be kept over the parts on a compress.

Prognosis.—Warts are benignant growths ; in childhood and in early adult life they need not suggest grave sequels. It is far different in advanced years, for, though these excrescences possess even then no malignant character, they are frequent precursors of epithelioma. While it may justly be urged that the early lesions in such cases were really epitheliomatous and not verrucous, the fact remains that many warty formations of apparently benign character do in advanced years, especially when irritated by frequent caustic applications, undergo a cancerous metamorphosis. The tuberculous wart also may become the source of general tuberculous infection.

MULTIPLE CUTANEOUS TUMORS ACCOMPANIED BY INTENSE PRURITUS.—Under this title Hardaway, of St. Louis, described a rare

disorder characterized by the occurrence of about sixty pea- to nut-sized, dense tubercles and tumors covered by a thickened, scaly, and excoriated, often hemorrhagic skin. In some situations coalescence had occurred, forming thus long and narrow plaques of nearly the width and of half the length of the finger of an adult. The lesions were seen upon the outer aspects of the arms and legs, the palms and soles, the sides of the fingers, and around the ankles, wrists, and elbows. The accompanying pruritus was intense and intolerable; and, having lasted for twenty-two years, it was associated with the degree of pigmentation often observed under similar conditions. The patient, who was an unmarried woman, fifty-one years of age, declared that the lesions first appeared as "blisters."

Specimens of these tumors, microscopically examined by Heitzmann, exhibited hyperplasia of the epithelial and connective tissues. The papillæ were longitudinally elongated, branching, and provided with narrow capillaries. Numerous nests, greatly varying in size and containing inflammatory elements with considerably enlarged blood-vessels, lay close beneath the papillary layer of the corium. These elements showed all stages of transition into basic substance. The deeper layers of the derma were built up of very coarse bundles of connective tissue and of numerous elastic fibres.

SYNOVIAL LESIONS OF THE SKIN.—These cutaneous lesions possess importance from a diagnostic point of view. We have observed them in several individuals in whom the exact nature of the disorder had not been understood. They occur in the form of wart-like projections from the skin, pseudo-vesicles, and bullæ, always over the site of bursæ connected with tendons, traversing the small articulations of the hand and foot. They are seen over the metatarso-phalangeal articulations; and in the hand most frequently over the dorsal face of the articulation between the distal and adjacent phalanges of the index-finger and thumb. The first form is that of a roundish, corneous, pea-sized wart with a yellowish centre, of long duration, usually insensitive unless roughly handled. When punctured a syrupy, yellowish, or grumous fluid exudes, which continues to form after repeated puncture. Split-pea-sized vesicles, and bullæ as large as a small coin, often exceedingly painful, are also seen, especially upon the feet, with simply an epidermic roof-wall. Each lesion contains the same thickened, yellowish or whitish fluid, occasionally mingled with masses like sago-grains. In every case the contents of the lesions are supplied by a synovial bursa beneath the skin, with which the lesion is either directly connected or in communication by a short sinus. The treatment requires the complete excision or destruction of the secreting cyst-wall.

Sidney Jones and Makins, of St. Thomas Hospital, exhibited several lesions of this character to the London Pathological Society.

PAPILLOMA.—This term has loosely been applied to a large number of cutaneous growths widely differing from each other, both histologically and clinically. It has been made to include the vegetations of syphilis, the neoplasms of nævus, and even the tubercles of lupus.

The designation papilloma is properly limited here to such circumscribed hypertrophies of portions of the skin as correspond with warts in their pathological significance. These growths may be defined as excrescences from the cutaneous surface, of a size considerably larger than that of any one of the varieties of wart with the exception of the condyloma, usually presenting a luxuriant growth composed of elongated papillæ, blood-vessels, and enlarged rete, covered externally with a smooth epidermis like a pellicle, or, more commonly, branched and tufted with the cauliflower aspect, and then usually smeared with a puriform mucus. The tumor increases rapidly until it attains a maximum size, and then indolently persists. Lesions corresponding with this description occur in carcinoma, syphilis, and lupus. They may develop upon any portion of the body.

PAPILLOMA AREA ELEVATUM (Beigel) is regarded by Crocker as an illustration of the results of the ingestion of one of the bromine salts, and this is well corroborated by the picture presented by one of our patients, in whom the face was covered with so-called "papillomatous" growths as a result of the administration of the salts of iodine.¹

PAPILLOMA NEUROTICUM is a term which has been applied to ribbon-like growths classed by some authors with ichthyosis hystrix. They properly belong, however, to the category of linear nævus.

NÆVUS PIGMENTOSUS.

(Lat. *nævus*, a mask.)

(PIGMENTARY MOLE. *Ger.*, FLECKENMAL; *Fr.*, TACHE PIGMENTAIRE.)

Abnormal congenital pigmentations of the skin vary in color from a light-yellow or chocolate-brown to a blackish hue, and they may be single, or be multiple and very numerous. They vary in size from that of a pinhead to that of tumors of large volume; and are either ovoid or circular in contour, or are so irregularly shaped as to present a fanciful resemblance to lower animals, whence the popular belief as to their origin in maternal impressions. They occur in both sexes, upon the face, neck, trunk, thighs, buttocks, and external genitals. The term NÆVUS SPILUS is applied to those pigmentations which occur in a smooth and otherwise unaltered skin; NÆVUS VERRUCOSUS, to those which are irregular and wart-like; NÆVUS PILOSUS, to those surmounted by a growth of shorter or longer, stiff or downy, dark-colored hairs; and NÆVUS MOLLUSCIFORMIS, or LIPOMATODES, to the soft or firm, more or less elevated and projecting tumors. A case of unusually large congenital nævus lipomatodes associated with multiple pigmentary nævi of several forms, occurring in a child observed by one of us in 1883,² is represented among the illustrations of this treatise. The so-called "white moles" are similar to those described

¹ "Dermatitis Tuberosa, due to the Ingestion of the Iodine Compounds," *Med. News*, Oct. 13, 1888; illustrated in color from a painting in oil.

² *Jour. Cutan. and Ven. Dis.*, July, 1885.

above, except that the pigmentation is very slight or apparently wanting.

LINEAR NÆVUS (Morrow),¹ NÆVUS UNIUS LATERIS, NÆVUS VERRUCOSUS, NÆVUS NERVOSUS, NÆVUS LICHENOÏDE, ICHTHYOSIS CORNEA, ICHTHYOSIS LINEARIS NEUROPATHICA, PAPILLOMA NEUROPATHICUM UNILATERALE.—Moles may be, when multiple, symmetrically or asymmetrically developed upon the surface of the body; and in either case may exhibit an arrangement suggesting the controlling effect of the nervous system.

In a case reported by one of us² there were multiple monolateral pigmentary nævi distributed over the left side of the trunk in the course of the intercostal nerves, and in such a manner as strongly to suggest to the eye their correspondence in site with the lesions of zoster of the same region. De Amicis³ had previously reported a somewhat similar case. Many other cases have been recorded in which pigmentary and verrucous nævi, consisting of variously sized and shaped lesions, were arranged in lines or streaks, usually on one side only of the body, and often along the course of one or more nerves. Selhorst⁴ and Thibierge⁵ have reported cases of this type in which involvement of sebaceous glands produced acneiform lesions.

Nævi seem to occur with equal frequency in the two sexes, and though they usually appear at birth or soon after, they are sometimes first seen at puberty or even later in life. It is possible that they may be acquired after birth, as claimed by some authors; but it is much more probable that such presumably acquired cases are instances of rapid development from minute congenital pigmentary moles.

The tendency of pigmentary nævi, after attaining full evolution, is to persist unchanged for a lifetime. Their increase in persons of tender years is occasionally characterized by a relative rapidity of growth. A pilary nævus upon the cheek of an infant may extend over nearly double its original area in the course of two years. In adults an increase in the size of these growths is unusual but does sometimes occur. Degenerative changes are possible. In the young there may be spontaneous gangrene or rapid necrosis following slight injury of the nævus. In older people there may be a malignant transformation into carcinoma or pigmented sarcoma.

Pathology.—Anatomically, pigmentary moles are readily separable into two classes: first, those in which the pigment only of the skin undergoes hypertrophy (nævus spilus); second, those in which there is always hypertrophy of the epidermis, together with a varying amount of hyperplasia of the papillæ, vessels, glands, or hair-follicles. The histopathology thus varies greatly in different cases, depending upon the extent to which these different elements of the skin are involved. The distinction made by v. Bärensprung, Gerhardt, and others between these two classes and still a third, in which the lesions are limited to

¹ N. Y. Med. Jour., Jan. 1, 1898.

² Chicago Med. Jour. and Exam., Oct., 1877.

³ Lo Sperimentale, March, 1876.

⁴ Brit. Jour. of Derm., 1896.

⁵ Annal. de Derm. et de Syph., 1896.

the cutaneous regions supplied by one or several nerves (linear nævus, etc.) is more apparent than real: for there is probably a trophoneurotic influence exerted in all cases, even in the enormous tumors of a mollusciform type. According to Demiéville, the pigment-accumulation occurs in the corium as well as in the epidermis, in the form of ribands stretching along the lines of the blood-vessels. Kaposi holds that moles as well as nævi result from a retained foetal impulse to development on the part of the cellular elements of the nævus, which carries them beyond the normal limits of growth.

Treatment.—Pigmentary moles very rarely spontaneously disappear. Their removal may be accomplished by excision, or by destruction with caustics, with the Paquelin knife, or with the needle by electrolysis. The last-named method is applicable only to the smaller and more superficial growths of this class. Fox¹ calls attention, in connection with this subject, to the need of passing the needle no deeper than the epidermis, sufficiently deep merely to “blister the surface of the black spot.”

ACANTHOSIS NIGRICANS.

Under this title Pollitzer and Janovsky² describe cases which at present it is difficult to recognize as instances of ichthyosis, of verruca, or of nævus pigmentosus. Morris,³ Pye-Smith, Darier, Spietschka,⁴ and others have since reported cases, numbering in all about thirty. In these patients the neck, the mouth, parts of the trunk, genito-crural and anal regions, hands, axillæ, and thighs displayed yellow and grayish-brown to almost black pigmented areas, covered in some places by fine papillary projections, some of which were scattered and discrete, while those situated in the axillæ, the groins, and the flexor surfaces of the joints were grouped and coalesced to form papillomatous, vegetating masses. In places there was simple exaggeration of the natural lines of the skin, in other parts there were ridges radiating from a central point. The mucous surfaces also were involved. Over the hands of one patient the color was deepest along the lines of the veins; and there was a glassy shimmer to the prominent normal areas of the cuticle. In Morris's case the pigmentation and warty growths were not always associated, there being a few sites of pigmentation in an otherwise normal skin, or in which there were unpigmented warty growths.

In sections made of the skin removed from one patient there were recognized dilatation of the blood-vessels and lymph-spaces in the papillary and subpapillary layers; increase of pigment-cells; enormous thickening of papillæ and epidermis; elongation and bifurcation of the rete-pegs, and some “suggestions” of epithelial pearls. A few colonies of bacilli having the shape of short, thick rods were discovered, but not in all the secretions examined. In several cases the condition has been associated with abdominal carcinoma.

¹ Electricity in Removal of Superfluous Hairs, etc. Detroit, 1886.

² Internat. Atlas of Rare Skin-diseases, 1890, iv., ii.

³ Medico-Chirurgical Transactions, vol. lxxvii.

⁴ Arch. f. Derm. u. Syph., 1898, Bd. xlv., S. 247.

XEROSIS.

(Gr. ξηρὸς, dry.)

(XERODERMA.)

Xerosis is a term which has been applied to the disease sometimes known as Xeroderma pigmentosum, or the Melanosis lenticularis progressiva of Pick. Xerosis has also been used as practically equivalent to ichthyosis.

In these pages the term is used to describe a condition included by most authors under the title of ichthyosis, which in many cases it really is; but in others the appearance of the integument is to be distinguished from that seen in the typical ichthyotic skin. The condition to which the name xerosis is here given is one intermediate between keratosis pilaris and ichthyosis simplex.

Symptoms.—The sole symptoms of xerosis are cutaneous. The skin of the body, in some regions more than others but at times universally, is to the touch dry, harsh, rough, and destitute of natural moisture and unguent. Closely inspected the skin-surface is seen to be scaly, exfoliation being of the character described as furfuraceous. In some cases the hand passed briskly over the surface of such a skin will cause separation of scales in a scanty shower; in other cases, while the surface seems ready for the furnishing of such flakes of epidermis, one is surprised to note that they are more or less attached, and the clothing of the patient is not, as in some forms of psoriatic and pityriatic disease, covered with epidermal scales. In brief, there is not in progress a catarrh of the horny layer, as in some of the other disorders named; but there is merely an unusual keratinic transformation of the elements of that layer.

The parts chiefly involved are the extremities, more particularly the hands, feet, forearms, and legs; but all parts of the skin may be involved, including the face, temples, cheeks, and even the lips.

The disorder is met with in all grades, from the mildest physiological dryness suggestive of so-called "goose-flesh," to that state in which the face only indicates an abnormal condition of the skin. The color of the integument in well-marked cases is always of a dirty-yellowish or dirty-brownish shade, suggesting an unwashed condition, and in extreme cases, usually those of older patients, the skin becomes rather deeply pigmented. The affection is seen in both sexes and at all ages, being a congenital condition the first appearance of which is clearly indicated only after variable periods of time after birth. Red-haired individuals perhaps furnish the larger number of well-marked cases. The general health is unaffected. Before puberty the affection in northern latitudes will often be inappreciable in summer and distinct in winter. As maturity is reached, however, the condition may become permanent.

This disorder is described by some authors as a variety of ichthyosis simplex, but the reasons for giving it separate consideration are that the disease does not furnish the typical plate-like scales of ichthyosis; and one child affected with what appears at first to be merely xerosis may exhibit a typical ichthyosis before puberty, while another will go

through life, the xerosis of his childhood becoming simply the extreme xerosis of mature years, but never an ichthyosis.

Xeroderma may, therefore, be regarded in one sense as a variety of ichthyosis, but it should not be described as a stage of the latter disease.

The disorder is congenital, and is readily distinguished from all furfureous scaling diseases of the skin by the absence of inflammation.

The **Treatment** and **Prognosis** are those of the disease next to be considered.

ICHTHYOSIS.

(Gr. ἰχθυΐς, a fish.)

(FISH-SKIN DISEASE, XERODERMA. *Ger.*, FISCHSCHUPPENAUSSCHLAG; *Fr.*, ICHTHYOSE; *Ital.*, ITTIOSI.)

Symptoms.—This disorder displays a wide variation in its symptoms. To the extremes in either direction two names are given, ichthyosis simplex and ichthyosis hystrix.

ICHTHYOSIS SIMPLEX.—The earliest and mildest form of ichthyosis simplex is, by many authors, held to be the condition of xerosis described in the preceding pages. It will be remembered, however, that such a xerosis may persist through life without the production at any time of the peculiar symptoms of the ichthyotic skin. In these earlier manifestations of the disease, then, the skin of the patient can merely be described as unusually harsh to the touch, moistureless, and covered with adherent or exfoliating fine scales. The scales are not massed, imbricated, nor displayed in plaques, and usually are of a dull yellowish-white color. It is rare that the practitioner is consulted for the relief of this disorder; it is usually discovered when the skin is exposed for other purposes (exploration, vaccination, etc.). In a still more advanced degree the scales are massed, forming grayish and whitish, polyhedral elevations or plaques, regularly outlined and closely set together, especially upon the extremities and certain portions of the trunk; elsewhere the scaliness described above may be present in a more marked degree. Variations occur, in consequence of which the plaques, bordered distinctly by the natural lines and furrows of the skin, are even depressed, centrally or completely, or they assume darker shades of color—viz., brownish and greenish-brown.

ICHTHYOSIS HYSTRIX.—With and without the symptoms detailed above, the hypertrophy of the skin may, in circumscribed patches or larger areas, produce irregularly shaped, verrucous, corneous, corrugated, wrinkled, or rugous masses, usually much darker in color than the patches seen in the simple variety of the disease, and more often also discovered in adult years. The resemblance is here rather to the rough bark of a tree than to the scales of a fish. In still rarer cases the excrescences assume a spinous, acuminate, or horn-shaped form. The hand passed over the skin-surface perceives not only the excessive roughness, but also the dryness of the skin. Perspiration in some cases is imperceptible in the parts affected. The nails are friable and

indurated; the scalp is scaly and covered with hairs of exceeding harshness. The palms and soles are often spared. Kaposi describes certain diffuse callosities occurring in the palmar and plantar regions differing from ichthyotic patches elsewhere. The face is usually spared, but, when involved, only the slighter manifestations of the disease appear there—minute, superficial, scaly patches of a grayish tint.

Later studies of the hystrix type of ichthyosis have led to a modification of the view formerly held. To-day many disorders to which

FIG. 56.



Ichthyosis hystrix.

the name ichthyosis hystrix was once given are classed with congenital warts, psorospermiosis follicularis, nævus unius lateris, and other similar affections.

Ichthyosis is accompanied by insignificant subjective sensations. The skin, indeed, of these patients may be free from the eczematous and other complications of the less diffuse keratoses. In four ichthyotic patients who were syphilitic there was a decided tendency to the production of lesions of the mucous surface without cutaneous efflorescence.

The extensor are usually more implicated than the flexor surfaces of the extremities.

Variations from the types described above are noted by observers. Hibert¹ for example, in a case of congenital circumscribed ichthyosis in a young woman, discovered a growth of thick hairs, one centimetre long, over the left shoulder and arm. Weisse² exhibited to the New York Dermatological Society a boy, ten years old, with hemorrhagic fissures in an ichthyotic skin, double ectropion, corneal opacities, claw-like fingers, attachment of the ears to the sides of the head, and a generalized condition of the skin which became very red when warm, some

FIG. 57.



Ichthyosis hystrix, vertical section: *a*, masses developed from the stratum corneum; *b*, cones formed by the rete; *c*, hypertrophied papillæ with dilated vessels; *d*, dense connective tissue of corium, exhibiting numerous vessels transversely divided. (After Kaposi.)

doubt however existing as to the diagnosis. Extreme types of ichthyosis are seen in the so-called "porcupine," "rhinoceros," or "hedgehog" patients. In these unfortunate beings the entire skin is converted into a rugged, bristling, warty, quilled, or horn-like envelope, suggesting the integument of the animals named. The terms Ichthyosis Serpentina, Nacrea, and Nigricans are employed to designate those conditions, respectively, in which is recognized a snake-like appearance of the skin, silvery whiteness of the scales, or a dark pigmentation.

¹ Virchow's Archiv., September 3, 1884, Bd. xcix.

² Jour. Cutan. and Ven. Dis., 1883, p. 49.

ICHTHYOSIS CONGENITA ("HARLEQUIN" FŒTUS).—This exceedingly rare deformity occurs as an intra-uterine modification of the skin of the fœtus, which is usually brought into the world as a non-viable monstrosity. The skin is represented by a thick, horny cuirass, deeply furrowed and resembling plates of armor. Large flakes of corneous epidermis, but partially attached to the corium, present their broad, free edges to the outer world. The ears, eyelids, and lips are usually wanting, being replaced by corneous folds suggesting in appearance the corresponding features of a mummy. The fingers and toes resemble talons and claws. Death commonly occurs in the course of a few days from inability to secure nutrition by the act of sucking and from imperfect development of other organs than the skin. Bowen¹ believes that some of these deformities are due to a persistence of the epitrichial layer of the fœtus.

Sherwell² describes a case of congenital ichthyosis of unusual interest from the fact that at the time of the report the infant had lived to be more than five months old, and seemed to be gaining in strength and improving in the condition of the skin. No history of heredity or of a family tendency to deformities of the skin could be obtained.

ICHTHYOSIS LINGUÆ ("psoriasis of the tongue") is a disorder described by the French under the title *leucoplasie*. It is not a variety of ichthyosis. (Cf. *Lichen planus* of the mucous membranes.)

Viewing ichthyosis as thus exhibited in various manifestations, it is seen to be a congenital deformity rather than a disease. It may be partial or general, though usually the latter, with intense manifestations over the extremities, especially over the extensor aspects; and relative immunity of the face, the axillæ, the groins, the flexor aspects of the limbs, the palms and soles, the glans penis, and the prepuce. Like xerosis, the deformity is rarely visible at birth, but usually becomes apparent before completion of the first year of life. It is first manifested in the regions of election named above—*i. e.*, over the elbows and the knees—and here also, as in xerosis, it may for some years only be apparent in northern latitudes in winter, disappearing almost wholly in the summer season. When maturity is reached the deformity has been known to disappear temporarily under the influence of intercurrent disease (*variola*). One patient is said to have regularly cast a slough of his integument in the autumn. The general health is usually unimpaired.

Etiology.—Ichthyosis is unquestionably a congenital disease, though its first manifestations are apparent only during the second year of life. It is said to be generally hereditary, but this statement should be accepted with some reserve for every individual case. One ichthyotic patient, married to his cousin, had by her five children entirely free from cutaneous disease. None of his parents or grandparents was similarly affected. The disease occurs equally in both sexes, and is liable to aggravation in cold climates and during the season of winter. The general vigor and development of patients thus deformed are, as a rule,

¹ Jour. Cutan. and Gen.-Urin. Dis., 1895.

² Ibid., 1894, p. 385.

unimpaired. Kaposi says: "The cause appears to be a local anomaly of the nutrition of the skin, especially involving its epidermic and fatty elements."

Thost¹ describes ichthyosis occurring in four generations. According to the ascertained genealogy, the ancestor first known to have suffered from this affection had five male children who inherited it, while one girl and one boy were spared. One of these affected subjects had five children, of whom three males showed the anomaly, while one boy and one girl remained free. Another brother, of the second generation, had five male and three female children; of these, four boys and two girls became affected. One of the latter (of third generation) bore four children, of whom three girls inherited the disease, while the fourth, a boy, escaped. It appeared that the affection always showed itself within a few weeks after birth, in the form of a roughness of the palmar and plantar surface. With the growth of the patient the condition constantly increased in severity, the epidermis shedding in large shreds, until the disease reached its maximum by the fourteenth year. There was a marked disposition to excessive sweating, particularly in the diseased localities; the sensibility of the skin remained normal. Microscopic examination showed, in addition to hypertrophied papillæ, great development of the sweat-glands, with marked thickening of the ducts. Treatment failed to give more than partial relief.

In the Molucca Islands and some other isolated regions ichthyosis, on account of its unusual prevalence, has been regarded as an endemic affection; but instances of this kind are readily explained, without referring to climatic influences, by the operation of heredity and inter-marriages.

Pathology. In the mild forms Unna describes an immediate formation of the horny layer from the rete without the intervention of keratohyalin. It is a complete cornification, the horny cells being homogeneous and containing no nuclear remnants. In this respect the hyperkeratosis is unusual, and contrary to the belief of many observers that cornification is impossible without the intervention of the keratohyalin of the granular layer. The rete is thinned more from an atrophic condition of the cells than from an actual diminution of their number, though this does occur sometimes, so that only one or two layers of cells cover the papillary tips. The lymph-spaces are also very small. The extremities of both the rete-pegs and papillæ are broad and flattened and their necks narrowed, so that they suggest a dove-tailed appearance. The coil-glands possess a swollen epithelium and a widened lumen resembling their excretory ducts, which exhibit less functional activity. The collagenous fibres are thickened at the expense of elastic, fatty, and lymphatic structures, and there may be a chronic low grade of papillary and perifollicular inflammation without plasma-cells and with only a few mast-cells. The follicle-mouths either were dilated with a broad horny plug, or were closed, retaining the plug in the dilated neck. In severe forms is noted a proliferating rete with reappearance of the granular layer and a deeper dipping down of horny substance, the cutis containing many plasma-

¹ Inaug. Diss., Heidelberg, 1880; Centralbl. f. Chir., 1881, No. 10.

and mast-cells. In these severe forms there is less superficial exfoliation, the dryness characteristic of the mild forms is wanting, and the condition is readily transformed into the clinical crusting type known as "ichthyotic eczema."

Ichthyosis hystrix has, according to Kaposi, the anatomical structure of all warts. Crocker finds that the lesions differ from plane warts in that the horny formation dips down deeply along the papillæ.

Ichthyosis congenita is believed by Bowen¹ to be due to a persistence of the epitrichial layer of the foetus. Wassmuth² has published the results of a study of a case of ichthyosis congenita (hyperkeratosis diffusa congenita). He found the changes limited almost entirely to the epidermis, the cutis showing only an insignificant chronic inflammation of low grade. As compared with normal skin, the papillæ were much more numerous, broader and flatter, with greater irregularity in form and size. The layers of the rete were thickened and the cells of the epithelial pegs assumed a spindle form. Nearer the surface they became polygonal. A granular layer could be made out definitely only on the scalp. The horny layer varied in thickness on different portions of the body, but averaged two hundred times thicker than normal. The sweat-glands were greatly increased in number, but otherwise normal. Deformities of the sebaceous glands were caused sometimes by keratinization of the follicle-mouths. The hairs grew quite normally except for their deformed shape, caused by the thick and dense horny layer.

Diagnosis.—Ichthyosis not only presents features which are so characteristic as to be unmistakable, but also those which can be well-nigh perfectly portrayed in plates. In this respect it differs from a long list of cutaneous maladies.³

Whenever necessary in the establishment of a diagnosis, aid of an important character can be obtained in the history of the disease and in recognition of the absence of the lesions and lesion-sequels exhibited in the exudative and scaling affections heretofore considered. The most conspicuous characteristic of ichthyosis as distinguished from psoriasis, lichen ruber, and pityriasis, is the absence of inflammatory phenomena.

Treatment.—The younger the patient applying for relief the larger are the chances of improvement and of possible recovery. Ichthyosis hystrix of mature years is practically incurable. Internal treatment is valueless. External treatment is directed to softening, macerating, or anointing the skin, and, so far as practicable, to preserving it in a softer state. This softening is accomplished by frequent baths, alkaline, vaporous, or combined with the use of soap or green soap, and generally followed by an anointing with vaselin, dilute glycerin, or lard. The French, after the removal of the denser layers of the horny plates with the aid of soft soap and water, anoint the body by friction with glycerolate of starch. Almond-, cod-liver, linseed-oil, or lanolin may be used after the bath. Only by the most assiduous perseverance is a desirable result obtained and permanently secured. In the severe

¹ Jour. Cutan. and Gen.-Urin. Dis., Dec., 1895.

² Beiträge zur path. Anat. und allgemein. Path., 1899, p. 19.

³ Cf. portrait of the ichthyotic skin in Plate F of Duhring's *Atlas*.

hystrix varieties the most annoying projections and rugosities may be removed by excision, by the Paquelin knife, or, less preferably, by the aid of caustics.

Subcutaneous injections of 1 grain (0.06) of pilocarpine have been practised in ichthyosis, in order to induce sweating, with a view to maceration of the skin. Van Harlingen recommends the following for use when the epidermis begins to shed after the application of soft soap:

R	Potass. iodid.,	℞j ;	133
	Ol. pedis bubuli, }	āā ℥ss ;	āā 15
	Adipis,	℥j ;	4
	Glycerin.,		M.

Anderson recommends the wearing of pure vulcanized India-rubber garments, a method of treatment too exhausting for all cases.

Taking a general survey of the therapeutic management of ichthyosis and its results, the course to be advised for the majority of patients is clear. With but few exceptions, the subjects of this deformity are either entirely relieved or greatly better during hot weather and in moist atmospheres. Marked exceptions to this rule, however, occur. Under these circumstances, and having regard to the essential fact that the deformity is lifelong in duration, patients should always, when practicable, select for permanent residence a climate most conducive to the comfort of the skin. There is no step which the ichthyotic patient can take comparable in value with the selection of a suitable environment.

Prognosis.—Having in view the facts set forth above, it will be clear that in no case can a favorable result be anticipated with respect to a “cure” of the deformity. Treatment, persistent, prolonged, and properly directed in connection with suitable climatic influences, may do much to improve the condition of the skin.

ONYCHAUXIS.

(Gr. ὄνυξ, a nail; ἀνέξω, to grow.)

Symptoms.—This may be a congenital or acquired disorder. The nail-substance may be developed to an unusual extent either as an idiopathic or as a symptomatic affection, and in each case the nails may simply be increased in volume, extent, or number, or may exhibit such increase in connection with secondary changes. Thus, the nail may develop to an extraordinary length or breadth, preserving its general character as regards texture, color, and position; or it may also be changed in any particular, becoming opaque, discolored, dirty yellowish, and blackish or brownish; rugous, furrowed, horny, and rigid; thickened in one part and thin, vitreous, and extremely fragile in another; tilted to one side or the other on its bed; or projected backward in recurved, irregular lines. Finally, the matrix may be inflamed, suppurating, hemorrhagic, or the seat of an excruciating pain. One or more of the nails may be affected; in some cases the entire twenty are similarly involved. The conditions of hypertrophy, atrophy, and dystrophy of the nails are frequently present in a single case, and it is often difficult to say which process is the most prominent.

The diseases in which these changes occur as symptomatic lesions are numerous, since it is evident that the matrix, from which the nail is produced, would scarcely enjoy immunity in the case of profound alteration of the skin in its vicinage. Thus, eczema, lepra, psoriasis, lichen ruber, syphilis, scarlatina, perforating disease of the foot, variola, and other diseases are attended by changes of various grades of severity in both matrix and nail.

In the condition termed *PARONYCHIA* (*WHITLOW*) one or both lateral borders of the nail bury themselves deeply in the tissues adjacent, producing thus an exquisitely tender and painful state of the soft parts, which may suppurate or surround the attached flange of the nail with exuberant granulations. This condition is more frequently observed in the nails of the toes, as these appendages of the skin of the feet are liable to injury from the pressure of ill-fitting boots, gaiters, or shoes. In the condition described as *ONYCHIA* the matrix is not only inflamed, but the nail-substance is, as a consequence, texturally changed. No strict line of demarcation, however, can be described between the two conditions. The term *ONYCHOGYPHOSIS* has been employed to describe the contorted deformities which cause the nail to resemble a claw.

ONYCHOMYCOSIS is the name given to that condition in which the nail-substance is invaded by vegetable parasites. In such cases the nails become opaque, discolored, and thickened, with a noticeable friability at the projecting border.

SYPHILITIC ONYCHIA is the condition in which one or several of the nails may become affected, though it is quite characteristic of the disease to exhibit limitation to the extremity of a single digit. In such a case there is usually a marked involvement of the peripheral soft parts, which may be infiltrated with gummatous material, though the nails may be extensively damaged when the soft parts of the fingers are apparently normal. The bullous syphiloderm, among the congenital manifestations of the disease, will at times form beneath or quite near the nail, thus endangering its integrity. In both forms ulcerative results are common, with secretion of a foul discharge.

In the affection termed "perforating disease of the foot" all the nails of the organ affected may exhibit a characteristic onychauxis or dystrophy.

Traumatism (constant or intermittent pressure of shoes) may augment the size of the nail in one or another diameter; and the deformed talons resulting from gross and long-continued neglect (East Indian devotees, etc.) are illustrations of another type of hyperplasia. Supernumerary nails may be found on supernumerary fingers and toes; or double organs on a single digit; or in unusual situations, as over the scapula (*Tulpius*); or on a digital stump; or in an ovarian cyst.

With respect to onychauxis proper, two forms are recognized: in the first, the nail-cells are more closely set together and the resulting hypertrophy is declared, not in changes in bulk of the nail, but in a dense, thick, opaque, glossy, grayish-white transformation of the organ. The nail is perceptibly increased in weight and becomes so solid that it cannot be cut with ordinary implements. It may be also, though not

PLATE XI.



Syphilis of the Nails.

[(From a photograph.) ;



changed in bulk, altered in shape, its free border being curved downward or upward.

The second form represents a visible hypertrophy in bulk, the nail being enlarged in one or several diameters. Enlargement in a transverse diameter necessarily involves the soft parts adjoining. Vertical hypertrophy results in any one of the claw- or talon-like forms of onychogryphosis.

Etiology.—Onychauxis may be congenital or acquired, idiopathic or symptomatic, and be due to inflammatory changes in the corium or matrix of the nail; to traumatism; to defective hygienic care of the general surface of the skin, including the nails; and perhaps, in exceptional cases, to senile influences.

Treatment.—The treatment of the disorders of the nails described above is largely that of the maladies in which they occur. Arsenic and iron are often indicated in these affections, and their influence upon the nutrition of the nail cannot be questioned. In syphilitic onychia the constitutional treatment of the disease is essential. The cutting, scraping, and trimming of the nail with the aid of the useful instruments found in the chiropodist's case are important measures in many patients.

The treatment of ingrowing toenail varies with the extent of the disease. In mild cases soft threads of charpie are insinuated between the offending border of the nail and the tender surface upon which it presses. Counter-pressure by plaster and the local use of a crayon of silver nitrate may be at times employed with advantage. In severe cases the nail may be removed, though this is generally unwise. The soft parts are, by some surgeons, completely removed from the side of the nail by means of a thin-bladed bistoury, and the nail permitted to grow down upon one side of the extremity of the distal phalanx, thus protecting the cicatrix and radically preventing recurrence of the disease.

The proper dressing of the feet in onychauxis of the toes is a matter of great importance. The shoes and socks or stockings should be adjusted both as to texture and shape to the special requirements of each case. After the hypertrophied tissue is largely removed by cutting or scraping the phalanx may be enveloped in a plaster-mull or salve-muslin of diachylon ointment, or with mercurial plaster, and the whole be covered with a leather or a rubber cot.

The **Prognosis** in these disorders of the nails rests entirely upon the nature of the malady in which they occur. Idiopathic and localized changes, as also those occurring in transient cutaneous diseases (*e. g.*, the exanthemata), often terminate favorably. In severe constitutional or grave cutaneous diseases the outlook is less promising. The diseases of the nail are usually more obstinate and less amenable to treatment than the similar affections of the softer parts. In cases in which there is congenital disease of the nails a prognosis should be made with reserve.

HYPERTRICHOSIS.(Gr. *ὑπέρ*, in excess ; *θρίξ*, hair.)(HYPERTROPHY OF THE HAIR, HAIRINESS, HIRSUTIES, HYPERTRICHIASIS, POLYTRICHIA, TRICHAUXIS. *Fr.*, POILS ACCIDENTELS.)

This anomaly may be congenital, and may occur in various grades. It is common to see infants at birth with extremely long

FIG. 58.



The Russian "Dog-faced Man."

hairs on the hairy part of the body, this growth being usually replaced later by shorter filaments. Universal congenital hirsuties is a rare deformity, the entire body being then covered with longer or shorter downy hairs of various colors.

Acquired hirsuties may be partial or universal, much more commonly the former. Thus, the hairs of the scalp or the beard may acquire an enormous vigor and length, reaching to the ground when the body is in the erect position ; or the hypertrophy of the hairs may affect the face of the child or the woman ; and in persons of the sex last named either the upper lip, chin, cheeks,

or all portions of the body usually covered by hairs in man, may be provided with a vigorously and symmetrically developed pilary growth.

Remarkable instances of universal congenital hirsuties are occasionally observed. The so-called "Russian dog-faced man" (Andrian Jeftichjew) and his son were noteworthy illustrations of this anomaly. In most cases the influence of heredity is distinct and is often accompanied by defective dental development, such as entire absence of molar or of canine teeth. In all cases of hypertrichosis, whether congenital or acquired, the parts normally unprovided with hair are not the seat of the pilosis.

As the growth of the beard in man is more or less associated with the maturity of the sexual organs, so the hypertrichosis of women and children is at times related to a precocious, perverted, or arrested function of the generative organs. The reported instances of menstruation in female infants and children usually include a description of abnormal pilary development about prematurely developed pudenda ; and after the climacteric period, when some women conspicuously in external appearance begin to resemble individuals of the opposite sex, either isolated, thick, bristle-like hairs develop over the chin or lips, or the extreme hirsute condition may be reached. Duhring¹ reported one

¹ Arch. of Derm., April, 1877.

such case, which is illustrated by a lithograph representing the face of a woman provided with a superb beard.

The influence of the sexual organs in the hypertrichosis of women is well demonstrated in the following case coming under our observation :

A married woman, thirty-three years of age, weighing one hundred and fifty pounds, mother of three healthy children, applied for relief of a general and facial hirsuties which had resulted in the growth of a full beard and moustache. She had not menstruated for more than a year, and had been pronounced by an expert to be past the climacteric. During 1884 and 1885 the hairs of the face were removed in successive operations by the electrolytic method described below. Menstruation began while she was subject to the influence of the galvanic current in the operating-chair, and continued thereafter irregularly, at times with intense pain and even menorrhagia. In 1886, after the last of the operations on the face, she rather suddenly lost in weight, decreasing to one hundred pounds, and began to menstruate regularly and painlessly. The hypertrichosis of the general surface then spontaneously disappeared. In the latter part of the year she again conceived, and in March, 1887, being then free from any form of hirsuties, she brought a healthy male child into the world.

As the result of the persistent application of stimulating and oily liniments over a region of the body (scapula, sacrum, sciatic notch, etc.), as also after traumatism by pressure or otherwise, a growth of long and numerous hairs is often produced. Care should be had in the management of cases of acne and rosacea in the persons of dark-skinned young women with luxuriant hair upon the head, lest a similar growth be produced upon the chin, cheeks, or nose.

In cases of hypertrichosis the hairs may be colored variously, and the hypertrophy of downy hairs purely be numerical, or result in increase in the actual size of the shaft of the individual filaments. In neither case do the hairs present any anatomical peculiarities of structure. The localized congenital form of hirsuties is often characteristic of certain moles, known as *NÆVI PILOSI*. The surface of pigmentary moles (*NÆVI PIGMENTOSI*) is often very extensively covered with hairs of a dark color. Singular anomalies have been figured in which extensive regions (one or several limbs, the entire back, even the greater part of the body) were the seat of enormous pigmented moles, covered with warts, fibromata, and other benign tumors, and clothed with a thick covering of longer or shorter hairs.¹ All such cases exhibit a striking development in either symmetrically or asymmetrically disposed areas of distribution of cutaneous nerves.

The *HYPERTRICHOSIS NEUROTICA* of authors is that condition in which an excessive growth of hair has succeeded spinal paralysis and other morbid conditions of the nervous centres. Under the title *Trophoneuroses of the Skin* in this work are described changes of a similar kind, in which there is association of hypertrichosis with hyperidrosis, changes in the nails, and even extensive tylosis of the palms and soles.

PLICA POLONICA was formerly supposed to be a disease peculiar to

¹ See the authors' case of *nævus lipomatodes* in a child, the pilary growth being at that age undeveloped. *Jour. Cutan. and Ven. Dis.*, July, 1885.

Poles (whence its name), but which has long been recognized as a result merely of persistent neglect, filth, the invasion by parasites, and consequent exudative disorders of the scalp. When it exists the hairs form a huge matted mass on the crown of the head. Hebra devotes an interesting chapter to the superstitious awe with which this accumulation of hairs, lice, and filth has been regarded. In Alaska a number of cases of plica have been observed among the natives of that region. A typical case of this deformity was lately presented at our clinic.

NEUROPATHIC PLICA.—Le Page¹ described a case in which tangled “lumps” and “festoons” of hairs, flat, curled, looped, and intertwined appeared on one side of the head of a girl seventeen years old, who had previously suffered from neuralgic pains in the site of the growth.

Etiology.—The causes of hypertrichosis are obscure. It is clear that whatever determines the blood in excess to any region of the body supplied with hair-follicles may indirectly be the cause of hypertrophy of hair, a fact demonstrated in patients who, after applying sinapisms or liniments for years to the skin over the seat of a rebellious neuralgia, exhibit in this region an abundant growth of hair, often several inches in length. In women, whose sex renders the anomaly most deforming and distressing, it is noted, as has been observed, in precocious, perverted, or arrested activity of the sexual function. It may be a racial peculiarity, a family trait, an inherited anomaly, or an epiphenomenon in dwarfs, monsters, individuals affected with club-foot, insanity, and congenital deformities of several kinds. The neurotic conditions accompanying certain varieties of hirsuties may be inappreciable; or evidently be due to traumatism; or be exhibited in paralyses, muscular atrophy, etc.

Treatment.—To Hardaway, of St. Louis, Americans are indebted for the popularization of the method of removing superfluous hairs by electrolysis, first devised by Michel, of his city. Extensive pilary growths are now often removed by this method without subsequent reproduction of the hairs. A fine needle is introduced into the hair-follicle and gently passed down to the papilla at its base. This instrument is connected with the negative pole of a galvanic battery containing six or more elements, the positive pole of which is in connection with a sponge-electrode held in the patient's hand, who is thus enabled to make or break the circuit at will. When the current is passed a few minute bubbles of gas escape from the orifice of the follicle, and when the hair-papilla is destroyed the hair itself is readily extracted. The dexterity acquired by practice is requisite for the proper performance of the operation, with a view particularly to the insertion of the needle at the proper angle into the follicle. Few patients complain of pain. The number of hairs removed at a sitting varies with the sensitiveness of the patient's skin. The resulting scar is quite imperceptible or far less disfiguring than the hirsuties, suggesting the appearance of the male beard after shaving. Transitory macules, papules, pustules, and wheals occur at the site of puncture. Care should be taken not to

¹ Brit. Med. Jour., January 26, 1884, p. 160.

insert the needle too deeply in the particularly vascular regions of the face, as an aneurysmal tumor might be produced as a consequence.

Every detail of this exceedingly simple operation has now been carefully studied by American operators, and the results, as confirmed by our experience, may be given as follows :

1. Any good galvanic battery may be employed. We use habitually a forty-cell stationary battery, the switchboard of which is so arranged that any number of selected cells may be brought into the circuit. A galvanometer should be placed in the circuit indicating a current of from one-half to four milliamperes. The number of cells employed should vary with different individuals, different parts of the face, and on different days with the same individual—*e. g.*, a smaller number is required when a patient previously operated upon returns after a somewhat long period of rest. Two to four cells only may be tolerated over the tip of the nose or the upper lip near the septum nasi. Twelve to twenty may be well borne, after some experimenting, on an insensitive chin.

2. The best needle is a carefully selected, fine jeweller's broach, its shaft and point being annealed by rapid passage through the flame of an alcohol lamp. It is often useful to have the point also well rounded on an emery-wheel. Iridio-platinum needles are useful, but inferior for general work to a broach.

3. The needle-holder should be simply a convenient insulated handle, sufficiently long to protect all the points of the operator's right hand from the current, and should be as light as possible, since a heavy holder interferes with delicacy of touch. Duhring's¹ holder, which is of the shape of a thin lead-pencil or pen-holder, is about four inches in length. The handle, or stem, is of hard rubber, through which passes a metallic rod, acting as a conductor for transmission of the current. The needle is inserted into the needle-holder proper, which is slotted, the needle being clamped immovably by means of a screw-nut. In the other end of the stem is an insulated inserting-pin attached to the cord leading to the battery. The instrument is convenient to handle and altogether well adapted to the operation.

4. The patient should be seated or reclining at ease in a good light, with the handle of the electrode connected with the positive pole of the battery in one hand, ready to press the sponge into the palm of the other. In this way, at the bidding of the operator, the patient makes and breaks the circuit at will. The sponge attached to the holder should be wet with a solution of salt and water.

5. As to further details of the operation, it is well (*a*) to make and break the connection only when the needle is *in situ*, as this diminishes the pain of the operation ; (*b*) to introduce the needle with a gentle manipulation (acquired only by skill and well characterized by Hardaway as a "catheterization" of the hair-follicle), observing a certain degree of parallelism with the hair-shaft as the needle enters ; (*c*) to operate leisurely, making sure that the current is not broken by separation of the hands of the patient before the hair is completely free in the follicle. This last can be ascertained by gentle traction on the

¹ Amer. Jour. Med. Sci., July, 1881.

shaft in from twenty to forty seconds after insertion of the needle ; (d) to operate in succession upon contiguous hairs when practicable, not selecting one here and one there, the latter course being productive of greater pain ; (e) never to use the positive pole in connection with the needle, an error which results in the production of unsightly pigmented blemishes on the surface of the skin.

The previous employment of preparations of cocaine both hypodermatically and by inunction—*e. g.*, cocaine oleate—to relieve or diminish the pain of the operation, may be followed by exceedingly unpleasant consequences. A dermatitis thus induced may persist for months.

Prince, of Boston,¹ lays stress upon the accurate regulation of the current by the aid of the absolute galvanometer, which we have found in practice useful but not essential. Fox,² of New York, reports a gradual decrease in the number of hairs returning after operation, proportioned to the improvement in the instruments and the skill of the operator. The percentage of such returns varies with these conditions.

All patients affected with hirsuties are not to be advised the operation. We have declined to operate in many cases which were not deemed to belong to the class in which the best results of the operation may be expected. Young and vigorous women, usually unmarried, may point out hairs to be removed that are merely full-developed filaments of a thick downy growth, all the hairs of which are rapidly pushing to equal maturity. Here the operation itself, by inducing hyperæmia of the skin, may simply hasten the hypertrichosis actually in progress, and thus aggravate the disorder. In most cases, when an operation is undertaken, both parties should fully understand the possible issue. It is a question whether it lies within the legitimate sphere of the physician to remove superfluous hairs from the habitually covered breasts and arms of women.

This operation has unfortunately found its way into the hands of the unprincipled and the ignorant, who, in their efforts to extract money from the credulous, have in some of the larger cities brought electrolysis for hypertrichosis into ill repute. The operation is, however, all that can be desired if only it be performed with sufficient skill and conscientiousness ; but if hairs are rapidly plucked away from their follicles while an electric current is passing merely, the return of each filament is prompt and mortifying to the patient. It should, therefore, be understood as a procedure requiring ample time on the part of the operator, and either fairly good vision or eyes aided by a mounted lens. Not more than from forty to sixty hairs can be removed in an hour by an expert operator ; and there are few who can work with advantage more than one hour at a sitting, or more than one or at most two hours in a day.

Hairy nævi may be removed by complete excision, but removal of the hairs by electrolysis will sometimes result in disappearance of the entire growth without such operation.

¹The Exact Measurement of the Electric Current, and other Practical Points in the Destruction of Hair by Electrolysis.

²The Use of Electricity in the Removal of Superfluous Hair, etc. Detroit, 1886.

Freund,¹ Wood,² and others report removal of hair with the *x*-ray. From six to twenty-four exposures are necessary, and in the majority of cases the hair eventually returns. In a few instances the result has apparently been permanent. By the careful and skilful use of brief exposures dermatitis and other unfavorable results may be avoided.

Depilatories for the removal of superfluous hairs operate by the destruction of the filament without obliteration of the papilla. The consequence is that the hairs are reproduced in the course of about a fortnight. Most of the compounds used for this purpose contain either calcium sulphate, arsenic sulphate, or barium sulphide, made into a paste with warm water. This paste is applied over the hairy surface with a spatula, and is permitted to remain until it dries, or produces a sensation of heat or burning, a period usually requiring ten minutes. It is then rapidly removed by scraping with a spatula, and the surface thoroughly cleansed with warm water, after which the skin is anointed with cold-cream salve or other similar unguent.

Of these depilatories Duhring recommends the following :

R	Barii sulphidi,	3ij;	8	M.
	Pulv. oxid. zinc., }			
	Pulv. amyl., }	āā 3iij;	āā 12	

To be prepared in form of an impalpable powder, which, just before using, is to be mixed with water to form a thin paste.

The following are formulæ devised by French authors :

R	Sodii hydrosulphit,	3iij;	12	M.
	Calcis, }			
	Amyli pulv., }	āā 3x;	āā 40	

To be finely triturated, and, when used, to be made in a thin paste with water. (Boudet.)

R	Calcis,	3j;	4	M.
	Sodii carbon.,	3jss;	6	
	Cerat. adipis,	3j;	30	

To be applied as a depilatory in the manner of a paste.

All these formulæ require caution in their use, and they should rarely be intrusted to patients themselves.

Shaving may be practised upon the hirsute face of women, and, with a similar end in view, also epilation; the latter, particularly in cases of hypertrophy of the hair limited in extent. Partial success has attended the thrusting into the follicles of needles previously dipped in caustic solutions, or heated in various degrees, but these methods are inferior to electrolytic destruction of the hair-papillæ. The hairs may be rendered less conspicuous by bleaching them with frequent applications of hydrogen peroxide. Bulkley³ states that a thorough use of this remedy retards the growth of fine hairs.

¹ Wien. klin. Woch., September 23, 1899.

² Lancet, January 27, 1900.

³ Jour. Amer. Med. Assoc., December, 1899.

ŒDEMA NEONATORUM.

Œdema of the newborn is characterized by the occurrence of an indurated tumefaction of the skin, most noticeable in the lower extremities of infants affected with impaired circulation.

Œdema and sclerema of the newborn have long been confused. The distinction between them was first well established in 1877, when Parrot, under the title *ATHREPSIE*, first described with clearness the morbid condition now recognized as *œdema neonatorum*.

Symptoms.—The disease, which is of exceedingly rare occurrence in America, is observed in infants prematurely brought into the world or at term, and of feeble vitality. Between the first and the third day after birth the child is found to be drowsy and difficult to waken, with the posterior and other parts of the thighs and legs, the hands, and the genital organs pallid, cold, livid, and retaining the impress of the finger as do œdematous tissues in general. At this point recovery may ensue, but in severe cases the œdema spreads, always more markedly in the lower portions of the body, and the skin becomes violaceous red, deep yellowish, or dirty looking. As the disease advances the integument becomes more and more difficult of indentation. Meanwhile the little patient becomes more drowsy, its respirations fewer, its cry weaker, and its temperature lower. Death may ensue from a pulmonary complication, from diarrhœa, or from any intercurrent disorder. Usually the child passes into a state of coma. When recovery ensues the œdema becomes less marked and the indurated skin more and more impressible. A few days, in satisfactorily managed cases, suffice to restore the patient to a condition of health. In some instances the œdema begins in other portions of the body than those named; and in cases there is a marked febrile reaction.

Etiology.—The recognized causes of the malady are prematurity of delivery, exposure to severe cold soon after birth, poor hygiene, atelectasis of the lungs, and inability to take the nipple. Blacker,¹ describes a case, seemingly typical, in which there was no evident etiology. The child at five weeks was perfectly well and properly nourished, but still retained the hard œdema of the buttocks, thighs, part of the arms, and chest. The mother was always well, and the pregnancy, labor, and puerperium presented no unusual features.

Pathology.—All cases show an effusion of yellow serum into the subcutaneous tissue, possibly in consequence of the enfeebled action of the heart, and the fat on excision is found to be particularly dense and yellowish. Enlarged liver, pulmonary congestion, venous thrombosis, and nephritis have been recognized in a small number of cases.

Diagnosis.—The distinction between œdema and sclerema neonatorum is not made without difficulty, the disorders greatly resembling each other. In sclerema the joints, and particularly the jaws, are immobile; the disease is likely to be generalized; the firmness of the integument is greater; and there is no tendency to an œdema chiefly marked in dependent parts of the body, as over the lower limbs. The color of the skin in the two disorders may be nearly the same.

¹ Brit. Jour. of Derm., 1898, vol. x., p. 87.

The pitting on pressure of the swollen skin is highly characteristic of œdema neonatorum. Scleroderma does not occur in children before the close of the first year.

The **Prognosis** is grave; but with proper treatment recovery may occur when the œdema is not generalized.

The **Treatment** is that of scleroderma neonatorum.

SCLEREMA NEONATORUM.

(Gr. σκληρός, hard; νέον, new; γεννάω, to bring forth.)

(SCLERODERMA NEONATORUM. *Fr.*, SCLÉRÈME DES NOUVEAU-NÉS.)

This disease is not to be confused with œdema neonatorum, from which it is wholly distinct.

Symptoms.—At birth, or between the second and the tenth day after, the lower limbs of the child assume a livid or whitish-yellow appearance, occasionally suggesting the hue of wax; and they become of a leathery consistency. This condition spreads gradually over the lumbar region, the dorsum of the body, and the chest in front and behind, and in the course of a few days may involve the entire integument. When pressed upon with the finger the skin produces the impression of half-frozen tissue; the face suggests a cold and rigid mask; the thighs in their sockets and the arms in the shoulder-joints are immobile. Usually there is somewhat less firmness of the abdominal integument. The taking of the nipple, deglutition, and even the opening of the oral orifice are effected only with great difficulty, and eventually become impossible. The respirations are shallow and imperceptible; the pulse in well-marked cases is imperceptible at the wrist; and the thermometer in the rectum is not raised to the lowest register of the ordinary clinical instrument. There is often no cry.

There may be a coincident icterus; and often sprue has been observed in the mouth before the declaration of well-marked symptoms. The congenital patients are often stillborn. The majority of subjects of the disease perish before the ninth day.

Etiology.—The immediate cause of the malady is retardation of the circulation in the cutaneous capillaries, and this may depend upon prior disease (pleuro-pneumonia, intestinal disorders) or upon conditions operating before or at birth (congenital anomalies of lymphatics, syphilis, feeble vitality).

Pathology.—Ballantyne has observed a small-cell growth in the corium, of perivascular situation; Langer ascribes the condition to excess of fatty acids in infants as compared with adults, with the result of producing a fat consolidation. In Northrop's cases¹ no fluid escaped on section of the tissues, which were as semisolid as if frozen; scattered hemorrhages involved the alveoli, connective tissue, and lymph-spaces of the lungs, but there was no collapse. According to Ballantyne, the disease is due to overgrowth of connective tissue leading to atrophy of the fat-cells and is dependent upon a trophoneurosis. Parrot recognized

¹ Arch. of Pædiat., 1890, vol. vii.

the fact that the connective-tissue trabeculæ were more numerous and thicker than in other cases.

The **Treatment** of both œdema and sclerema neonatorum is by elevating the body-temperature (in an incubator, wrapping the entire body in wool, warm water-baths, etc.), and by improving the nutrition in every possible way (sterilized milk and stimulants by the stomach-pump, through nose or pharynx). The body may also be well rubbed with warmed oil or camphorated alcohol. Brocq suggests friction with the warm hand from below upward.

SCLERODERMA.

(Gr. σκληρός, hard ; δέρμα, the skin.)

(HIDE-BOUND SKIN, DERMATOSCLEROSIS, CHORIONITIS, SCLERIASIS, SCLEREMA ADULTORUM. *Ger.*, HAUTSCLEREM ; *Fr.*, SCLÉRODERMIE.)

Symptoms.—[A] **Diffuse Symmetrical Scleroderma.**—The skin-symptoms of the disease may be preceded by prodromic pains of a rheumatismal character, or by singular cutaneous sensations (pricking, tingling, formication), or by muscular cramps, and neurotic sensations. In some instances, also, there are vesicles, blebs, scales, local hyperidroses, or losses of sensibility in the skin which is about to become the seat of the disorder.

With and without these prodromic features the skin and subcutaneous tissue, chiefly of the upper portion of the body, become symmetrically involved either in a gradually increasing induration or in an obscurely defined œdema of a firm character which at first pits under strong pressure with the finger, but later becomes as indurated and tense as hard leather. The integument is usually exceedingly difficult to pick up between the finger and thumb, and is shining, smooth, waxy, or of alabaster-like hue ; in other cases it is of a dirty-yellowish, grayish shade. This is the stage of infiltration, and when pronounced it is not to be mistaken for any other condition. The face may be, both to the eye and the finger, mask-like, immobile in features, and expressionless. The lips are then stiffened and opened with difficulty ; the eyelids are similarly but much less severely involved. The back of the neck may be firm ; the chest, shoulders, and arms may be either immobile or movable with difficulty ; the ribs are often bound down so firmly by the cuirass of leathery integument that respiration may be impeded seriously. The temperature is not changed, and sweat may or may not be exuded over the affected areas. The abdominal surface is relatively spared. This condition may come on insidiously, and may require years for its complete evolution ; at other times the progress is rapid and the evolution is even subacute in type. Often the upper extremities are so involved that the fingers resemble curved talons ; the wrists lose their flexibility, the forearms their usefulness. So extreme is the helplessness of some patients that they require to be dressed, washed, and fed, even when able to travel with relative comfort.



MORPHEA, after a portrait in oil of one of the author's patients.

The lesions are accompanied at times by other subacute disorders, such as subcutaneous tubercles, eczema, erysipelas, canities, anidrosis, zoster, and acne.

In the later or atrophic stage of the affection the œdematous or infiltrated areas undergo induration and contracture. The skin becomes then more and more tightly stretched and thinned over the underlying structures, and it is no longer possible after drawing the finger over the surface to produce a yellowish-white tracing of its route that disappears as the circulation slowly returns along the line. When this extreme is reached the atrophic skin becomes dry, scaling, fissured, or even ulcerated; the muscles may waste considerably, thus reducing a limb several inches in circumference; the teeth may fall; the fingers permanently be flexed into the palm or the forearm on the arm. When the condition becomes to this extent grave, the patient, who before seemed to enjoy a fair degree of health, suddenly experiences rheumatoid pains and neuralgias, or exhibits other signs of constitutional impairment; and intercurrent visceral disorders gradually bring on a marasmus which in some of the reported cases has ended fatally with renal, cardiac, or pulmonary symptoms.

[B] **Circumscribed Scleroderma;** MORPHŒA (Gr. *μορφή*, a blotch); KELOID (of Addison).—Circumscribed scleroderma, or morphœa, is characterized by the occurrence of one or of several discrete, well-defined, firm, and smooth points, patches, lines, or bands, that are often slightly elevated or depressed, and surrounded by a delicate violaceous or lilac-tinted halo, the involution of which may be followed by macular, punctate, or striate atrophy of the skin.

This form of scleroderma was once held to be rare. It is, however, more commonly under observation than is usually believed. French authors distinguish between the variety displayed in plaques and that occurring in bands. Some forms of the latter variety are better described as *lineæ atrophicæ*.

The patches of morphœa commonly begin as rosy or violaceous macules, which irregularly extend in area from nail-sized to larger patches, either with relative rapidity or with slowness. In a variable period of time the centre of each patch becomes whitish, while the peripheral portions of the plaque retain their peculiar shade of color. There is thus formed a roundish or oval or irregularly outlined area, rarely larger than a dinner-plate, with a central portion somewhat elevated, infiltrated and “lardaceous” or flattish, and near the level of the adjacent skin. The blanched centre has often the hue of old ivory; later, this may be commingled irregularly with a flattened streak or band, distinguished with difficulty from scar-tissue. These patches may be single or multiple; in the latter event they are arranged, as a rule, along the line of distribution of the cutaneous nerves of the trunk, along the inner faces of the thigh, more often on the lower than over the upper extremities, and asymmetrical in most cases. When the tissue is pinched between the thumb and finger it at first gives the impression of stiffness and hardness; in the later stages of the disease the skin may be so atrophied over the region involved that it is impossible to make this test. The surface is dry and smooth,

or, when very carefully inspected, is seen to be traversed by exceedingly delicate lines. In some instances the plaque is dotted regularly with depressed points resembling the patulous orifices of sebaceous glands of the face in certain cases of acne, the slightly discolored, minute, funnel-shaped orifices contrasting thus with the dead-white hue of the patch. In other cases this appearance of dotting or picking out of the surface is more conspicuous at one part than another, being, for example, well shown at an advancing border, with a dead-white, depressed centre, or at both extremities of a long oval.

The border of typical patches is characteristic. It is made up usually of a narrow zone having a pinkish, lilac-tinted, or violaceous hue, which, when closely viewed, is seen to be constituted of a plexus of fine vessels. The zone may be wanting wholly, as is well shown in some cases in which the temple is involved; the border further may be present in such degree as to be fully as conspicuous as the whitish central area. In a patient presenting a palm-sized patch over the sacrum, together with a few multiple spots on the side of the neck (a portrait of the same having been made in oil), the flame-like, violet-shaded areola extended for several inches on one side away from the disk, and one of the larger vessels of which it was constituted could be seen at a distance of several feet from the patient. Purplish, and even blackish, hues have at times been recognized in the halo by other observers.

As a rule, there are few subjective phenomena; in some cases itching, tingling, pricking, and other sensations are experienced. The variations observed in this affection are as numerous as they are striking. The disease may be extensive or be limited to one or a few very small spots. The names: *MACULOSA*, *NIGRA*, *LARDACEA*, *ALBA*, *PLANA*, *ATROPHICA*, etc., are merely descriptive of clinical features, and are becoming obsolete.

Between the several types of scleroderma noted above are to be found instances which it is difficult to assign to the one class or the other. Some are mixed forms in which diffuse scleroderma is developed in one part of the body and a circumscribed form in another; in other cases numerous morphea plaques are distributed symmetrically over the body or develop a generalized symmetrical scleroderma. As a rule, the symmetrical forms occur most extensively over the upper part of the body; while the more frequent unilateral plaques of morphea affect in greater proportion the lower limbs. Often the symptoms of the disease resemble at the outset those described as characteristic of *œdema neonatorum*, with pitting of an *œdematous* surface under pressure. Great variation has been noted as regards the presence, absence, or increase of sensibility. Sweat and sebum may or may not be secreted from the affected patches.

In the generalized forms, whether symmetrical or not, there may occur serious complications from visceral disease (cardiac, vascular, or renal) due in part to interference with the function of large areas of the skin. Arthritis is not infrequently a concurrent disorder. In some cases the mucous surfaces are involved. In other cases there are

organic changes in the viscera as well as sympathetic disturbances of function. Some of the visceral muscles have been recognized as involved in scleroderma.

According to Besnier and Doyon, pigmentation is one of the most important of sclerodermatous symptoms. Beside the pigmented dots visible over the sclerosed patches, there often exists a species of chloasma in the form of bronzing, diffuse or in irregular islets, over the neck, shoulders, and elsewhere. These pigmentations are often interspersed with whitish patches of vitiligo.

The course of circumscribed scleroderma is either chronic, lasting for from one to ten years or more; or subacute, with evolution accomplished in a few days and an almost equally rapid involution; or atrophy of skin, subcutaneous tissue, and muscle may slowly or rapidly follow, and result in the production of attachments to periosteum or in deformity due to contracture. Ulceration may ensue, and in a few instances has occurred early in the disease. Atrophy of bone is an exceptional result. In yet other cases absorption of the material constituting the plaque is effected without sequels of any sort, few, if any, traces of the process remaining.

The band-form of circumscribed scleroderma usually occurs in ribbon-shaped elongations stretching along a limb in its longitudinal axis, or over one-half of the face. Most of these cases are distinguished by the occurrence of either an elevated ridge or furrow, or (what is not very rare) an elevated ridge with a furrow on one side. The median line of the forehead is the commoner site of this anomaly on the face; over the trunk it is best displayed on the breast. As noted above, some of the cases collated in this category are instances of *lineæ atrophicæ*.

Finlayson¹ observed in one case of scleroderma symmetrical gangrene of the extremities, a complication related doubtless to the "symmetrical asphyxia of the extremities" described by a number of English authors. The so-called "glossy fingers" and "sclerodactylie" of symmetrical distribution may belong to the same category.

HEMIATROPHIA FACIALIS.—Severe grades of the disease are noted by several authors, in which to a varying extent, the surface of the lateral half of the face has been involved. Here not only the subcutaneous tissue, but also the aponeuroses, periosteum, and bones may participate in the atrophy, a fact well illustrated in the case of Robinson's patient.² In this instance there was also a distinct sclerodermatous lesion on the face of one thigh.

Etiology.—About three-fourths of all cases occur in women. The young and middle-aged are generally the victims of the disorder, though cases are reported between the first year of life and advanced age. The predisposing causes of the affection are: rheumatism and the climatic changes to which rheumatism is most often attributed; all neurotic states due to emotional influences, grief, anxiety, etc.; traumas by friction, blows, and direct injuries of nerves; blisters;

¹ Med. Chronicle, January, 1886.

² Amer. Jour. Med. Sci., October, 1878.

exposures to the direct action of the sun; and obscure disturbances of the nervous centre that are difficult to appreciate. In one case, a young woman with a series of circumscribed patches along the inner face of the right thigh, could scarcely endure the fatigue of exposure of the part while an oil painting was made of the disks.; another case was that of a muscular blacksmith, who exhibited a large plaque of morphœa over the trunk.

The etiological importance of the nervous system is too obvious to require demonstration. This fact is much more distinct in the localized manifestations of the disorder, in which a region supplied by a single nerve or traversed by a nervous trunk is solely involved. Harley, Schwimmer, and others have recognized cardiac and gastric disturbances; Westphal and Eulenberg, central and peripheral changes in the nervous system; Heller demonstrated in one case closure of the thoracic duct. Bancroft¹ repeatedly recognized filariæ in large numbers in the blood of a young girl in Australia who was affected with a characteristic scleroderma. Atrophy and other changes in the thyroid gland have been noted by Hektoen,² James,³ Uhlenhuth,⁴ and others.

Pathology.—The confusion which has existed in relation to the question of the identity of scleroderma and morphœa is due to various causes. By several authors similar symptoms are described under each of the two names; and the symptoms described as peculiar to each are occasionally seen either simultaneously or successively in the same individual.

Microscopical examination of the structures involved in the disease has proved unsatisfactory. The connective tissue of the skin has been found, according to Kaposi, indurated and thickened; its elastic fibres multiplied at the expense of the panniculus adiposus; its muscular tissue hypertrophied; the pigment in the rete and corium increased; the sweat-glands dilated; the lumen of the blood-vessels diminished, and their walls ensheathed in accumulations of what he terms "lymphatic cells."

The nature of the pathological process in scleroderma is unknown; no characteristic changes in the nervous centres have yet been appreciated. In the generalized form the two vascular systems, the sanguine and the lymphatic, exhibit within and about the walls of vessels embryonic cells which become converted into fibro-plastic bodies. This change produces in parts an increase in the tunica media until it is twice its normal thickness. The lumen of the vessels is thus obstructed and at times obliterated, indicating that the essential process is an endarteritis obliterans, inducing, in the areas to which each twig of vessels is distributed, an exsanguinated state with a surrounding hyperæmia. The latter accounts for the peripheral halo of the circumscribed forms of the malady. That there is at the same time lymphatic obstruction is clear, with, either from the one cause or the other, an overproduction of connective tissue and elastic fibres in the areas of

¹ Lancet, February 28, 1886, p. 380.

² Centralbl. f. allgem. Path. u. path. Anat., 1897, Bd. viii., S. 673.

³ Scottish Med. and Surg. Jour., May, 1899.

⁴ Berlin. klin. Woch., 1899, No. 10.

involvement. The corium is commonly hypertrophied, at least in the papillary layer ; while the subcutaneous tissue and panniculus adiposus are proportionately thinned ; and even at times, as suggested by the clinical features noted above, may wholly disappear. The pigment commonly vanishes from the prickle-layer ; the coil-glands at first are dilated, and later may disappear when the atrophic stage is reached. In the late circumscribed forms the papillæ of the corium may also fall into atrophy, and the superior vascular plexus of the corium may undergo obliteration by thrombosis (Crocker). The compression of both glands and vessels is supposed to account for the final sclerotic and cicatriform condition of the advanced cases.

Diagnosis.—In vitiligo there is an entire absence of all structural cutaneous changes and the skin has a characteristic milky-white color, the hairs of the part being also blanched. Both the pigmented macules and atrophic patches of lepra are remarkable for their anæsthetic condition, and their coincidence with, or sequence from, other readily recognized symptoms of the disease, such as tubercles, bullæ, ulcers, and involvement of the hairs, nails, eyes, and other organs.

In sclerema and œdema neonatorum the age of the patient would serve to distinguish the disorders from scleroderma. In *cancer en cuirasse* (papillary cutaneous carcinoma), chiefly of the skin of the breast in women, but encountered elsewhere, the resemblance to scleroderma is striking ; and eminent surgeons have confounded the two. In both affections the skin, especially that of the thorax, is converted into a dense leathery cuirass, but the distinction is made as follows : first, the carcinomatous condition of the skin may be secondary to a cancerous change in the breast or nipple, in which case the doubt is readily removed ; second, if primary, the firm, isolated, and deeply tinted nodules of cancer are readily distinguished, projecting from the dense peripheral cutaneous infiltration ; third, the œdema and lymphangitis associated with cancerous involvement are most often unilateral, and are limited very distinctly to the arm on the side of the body most seriously involved ; fourth, the line of demarcation of the cancerous change, while indeterminate on one side, is usually at the edge of advance distinguishable by tongue-like erythematous prolongations of a dull-reddish hue ; lastly, the tendency to ulceration, the coincident and resulting cachexia, the possible axillary adenopathy, and the relatively rapid and fatal result in cases at all liable to be confused with scleroderma, point severally to the truth.

In ichthyosis the congenital history, the presence of ichthyotic plates over the affected surface, and the general conservation of the health of the patient suffice to identify the disease.

In progressive lenticular melanoderma (*angioma pigmentosum et atrophicum*) the melanotic condition of the skin, in connection with warts, tumors, ulcers, and limitations of the disease to the exposed parts, suffice to distinguish its character.

Treatment.—In the management of symmetrical or generalized scleroderma the influence of climate should be considered. More improvement is secured for these patients after removal to a dry equable climate than can be obtained elsewhere. If they must remain under

unfavorable climatic influences, the body should be well protected by woollen, over muslin, silk, lisle-thread, or balbriggan undergarments; and while an outdoor life is desirable, such exposure should always be avoided in unfavorable weather. Internally cod-liver oil, the ferruginous tonics, and the nutrients generally are often indicated, as well as a roborant and generous diet. Thyroid extract has given good results in a small percentage of the cases in which it has been tried. Phillipson¹ reports relief of severe diffuse scleroderma by the internal administration of salol in doses of from 2 to 3 grammes daily. Hebra² reports good results in three cases from intramuscular injections every second day of 10 minims of a 15 per cent. alcoholic solution of thiosinamin. The employment of potassium iodide, arsenic, mercury, and other remedies, such as lithium benzoate, sodic bicarbonate and salicylate, and the alkalies, supposed to be indicated by the rheumatoid symptoms, have been alike praised and condemned by men of eminence on both sides of the Atlantic. Remedies of the reconstituent order should always first be employed and no resort be had to others save in emergency.

The local treatment is by baths, massage, galvanism, alternate hot and cold douches or the actual cautery over the spinal column. Following the daily salt-and-water or alkaline bath of a temperature suited to the season of the year and the physical condition of the patient, inunctions with cod-liver oil, lanolin, lard, or vaselin, neat's-foot oil slightly scented, or other simple oil or ointment, may be used. To these may be added with advantage in many cases 2 to 10 per cent. of the oleate of mercury or of ammoniated mercury. In morphœa Brocq employs electrolytic puncture as in the treatment of hypertrichosis. Mercurial plasters are applied in the intervals of each sitting.

Prognosis.—Symmetrical diffuse scleroderma, well treated in young subjects, usually results favorably without impairment of the general health. When atrophic changes occur the skin may recover its suppleness and pliability, but this cannot be counted upon. Deformity may in either event complicate an otherwise favorable issue. In a small proportion of cases the disease becomes so extensive and severe as to produce a fatal marasmus; more frequently death results from intercurrent disorders.

In circumscribed patches (morphœa) the majority recover without serious consequences; the few go on to sclerosis of subcutaneous structures and consequent deformity. In the most of the simpler cases the disease from first to last seems to have but a local significance.

ELEPHANTIASIS.

(Gr. ἐλέφας, elephant.)

(ELEPHANTIASIS ARABUM, PACHYDERMIA, BUCNEMIA TROPICA, ELEPHANT LEG, BARBADOES LEG.)

Under this title has been included a group of affections differing both as to their essential cause and nature. On the one hand are to

¹ Deutsch. med. Woch., 1897, 33.

² Arch. f. Derm. u. Syph., 1899, vol. xlviii., No. 1.

PLATE XIII.



Elephantiasis Telangiectodes of the Upper Lip and Portions
of the Face.

be recognized those disorders due to obstructive embarrassment, simple or even mechanical in character, of either the venous or the lymphatic circulation; and, on the other hand, obstructive embarrassment due to the presence in the vessels of a parasite, the *filaria sanguinis hominis*. The symptoms of the two disorders are for the present considered together.

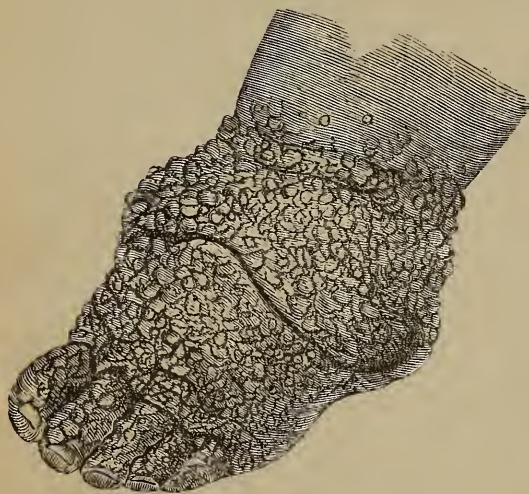
Symptoms.—The disease is more common in the tropics, where it is usually of parasitic origin; but sporadic cases are of occurrence in all countries, and are not very rare in portions of the United States. The most frequent seat of elephantiasis is the lower extremity of one side, where the foot, the leg (Fig. 59), or also the thigh of the same limb, may enlarge. The penis and scrotum of men (Fig. 60), the labia and clitoris of women, the upper extremities, the face, the ear, and portions of the trunk may likewise become involved.

The disease is insidious in its approach, and remarkably chronic in its career. Usually, localized inflammations precede, as an erysipelas or a dermatitis, with or without involvement of the lymphatic vessels and glands. At the same time there is a condition of general fever, to which succeeds a defervescence, with abatement of the local inflammation, its sequels becoming manifested in a more or less persistent œdema of the part lately inflamed. After intervals of days, weeks, or months the pyrexia recurs with still greater involvement of the swollen tissues, which, with each access of fever, increase in volume and gain in density. When the elephantiasic condition is fully developed the skin is tense, glossy, and blanched or discolored in various shades. Pressure upon the œdematous part is followed by pitting, but the tissue beneath is felt to be brawny and indurated. The parts beneath the skin are perceptibly increased in volume, especially the subcutaneous tissue; and the circumference of a limb thus diseased may be several times larger than that of its fellow. A lymphangitis is usually declared by painful, cord-like, linear indurations of the part, associated with adenopathy of the nearest ganglia. In older cases the skin loses its glabrous aspect, and exhibits eczematous, verrucous, papillomatous, seborrhœic, and even ichthyotic changes. Pigmentation, even to a blackish tint, may ensue; scaling, fissuring, and furrowing are common; and the accumulation of altered sweat and sebum in these depressions is the source of an offensive stench. During the course of the disease almost all the elementary lesions of the skin may be displayed: macules, vesicles, papules, tubercles, pustules, blebs, ulcers, crusts, scales, excoriations, and fissures. Warty growths form as large as those seen in ichthyosis hystrix, and in some cases reddish-colored tumors spring from the hypertrophied integument.

When fully developed in the lower extremity the unwieldy limb, with the foot, ankle, and leg massed into one huge, cumbrous cylinder, bears a striking resemblance to that of the elephant, from which circumstance the malady first received its name among the Arabs. Locomotion is then greatly impeded or is rendered impossible. Not less striking is the similar deformity of the genital labia of women or the scrotum of the male, the latter at times hanging far below the knees (Fig. 60).

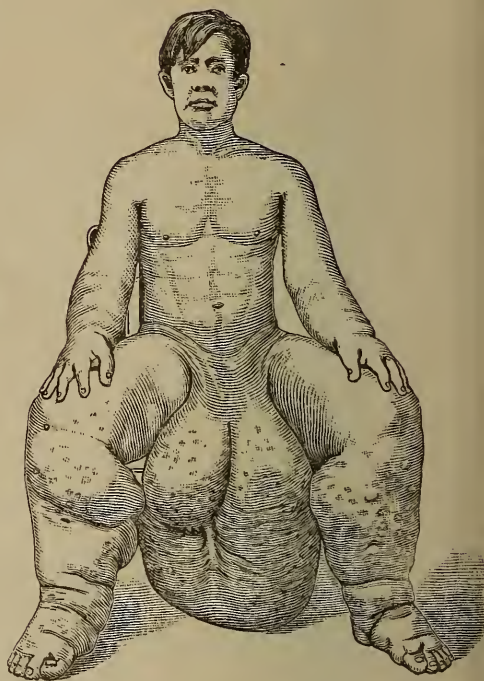
The penis disappears in rugous folds, and the urine passes along a gutter formed of skin transformed into quasi-mucous membrane. As a consequence of the fissures and ex-coriations which form the lymphatic channels are finally opened, and a true lymphorrhœa results.

FIG. 59.



Elephantiasis of the foot and leg.

FIG. 60.



Elephantiasis scroti.

Subjectively, the disease may be regarded as productive of less discomfort than would be suggested by its formidable features. Pain is experienced occasionally, and during the exacerbations accompanied by pyrexia there is corresponding malaise. The chief subjective sensations are those induced by weight and consequent tension, inseparable from the enormous masses of hypertrophied tissue.

In elephantiasis of the scrotum there are frequently symptoms of irritation, both systemic and in the vicinity of the affected part (nausea, vomiting, inguinal pain, epididymitis, effusion into the sac of the tunica vaginalis, inflammatory swelling of the spermatic cord, and at times hernia). In some cases vascularization of the surface (telangiectatic elephantiasis) is a prominent feature. The form described below as Nævoid elephantiasis may belong either to the same category, or to others in which there is lymphangiectasis ("lymph-tumors," "lymph-scrotum"), and these may be due either to lymphatic obstruction or to the parasite described later as of etiological importance in this connection.

LYMPH-SCROTUM (VARIX LYMPHATICUS, NÆVOID ELEPHANTIASIS), fully described by Wong, Carter, Fayrer, Manson,¹ and other East Indian observers, is that condition in which the scrotum is more or less enlarged, and, though soft and silky to the touch, presents varying numbers of lymphatic varices, which on puncture or spontaneous rupture give exit to a rapidly coagulating lymph or chyle. Several ounces of

¹ Hirsch: Handbook of Geog. and Hist. Path., London, 1885, p. 328; and Tropical Diseases, London, 1900, second edition.

this liquid may escape in an hour, and the discharge may continue to the point of exhausting the patient. The disease is produced solely by the *filaria sanguinis hominis*,¹ the embryo filariæ being present in the lymph and in the blood. The inguinal and femoral glands are usually enlarged. As in elephantiasis of other organs, there may be occasional fever, chills, erysipelas, and other localized inflammations. Abscesses may occur, and in many cases the condition is followed by elephantiasis.

ACROMEGALY.—Cases of this rare form of elephantiasis are not infrequently reported. Typical instances of the malady have been made the subject of monographs (with illustrations of the facial and manual deformity) by Church, Hessert,² and Zeisler. There is symmetrical enlargement of all the tissues, including bone. It is most common on the face and limbs. It is believed by many that the condition is dependent upon disease of the pituitary body.

Cases of hypertrophy of one-half of the face are also to be assigned to the group of maladies to which the name elephantiasis is applied, excluding the parasitic and lymphangiectatic varieties. Kiwall's patient, a girl eighteen years old, with a enlargement extending from brow to throat and involving the right side of the tongue as well as the bones and other soft parts, is an example of this anomaly. Crocker, Hebra and Kaposi, Barwell, and others report similar instances. One such, the subject of a skilful operation by Senn, suffered from a marked enlargement of one side of the face, due in part to an angiomatous and in part to a connective-tissue overgrowth.

Etiology.—The causes of elephantiasis are different in the several disorders grouped under this title. Wucherer, Lewis, and Manson have demonstrated in cases prevalent in the East and West Indies, Egypt, Arabia, Abyssinia, Africa, Malabar, Barbadoes, Brazil, Mexico, and parts of China, the presence in the blood of the *filaria sanguinis hominis*. Embryos and filariæ are found adhering to the walls of both lymphatic vessels and blood-vessels in elephantiasis of the tropics.

Manson reports that in countries where elephantiasis is common the majority of the natives have filariæ in their blood. The parent-worm lives in a large lymph-channel and produces young in immense numbers which circulate in the blood. It is only when the parent-worm aborts and the ova or immature filariæ are unable to pass through the lymphatic glands that the circulation is obstructed. Thus it often happens that filariæ are no longer found in the blood of an individual who has developed elephantiasis. They are supposed to be introduced through the medium of the mosquito.

Other disturbances due to the same parasite, and only in part recognized as elephantiasic, are the lymph-scrutum described above, chylous abscess, effusions, and vascular and hypertrophic enlargement of tissue and glands in and about tumors of the sort recognized as parasitic.

In other cases different causes are to be recognized. Predisposition

¹ At the Third International Congress of Dermatology, held in London in 1896, Manson exhibited living specimens of *filaria* moving in the blood-vessels under the microscope.

² Med. Record, May 6, 1893 (reprint).

of races or individuals, heredity, climatic influences, malaria, fatiguing labor with the feet and legs immersed in water, and filth in connection with "misery," have all been cited as favoring conditions. To these causes should be added the local disorders especially common in the lower extremities that have in cases proved to be points of departure of elephantiasic hypertrophy, such as obstruction to the blood or lymphatic currents by pressure of tumors, pregnancy, or neoplasms; ulcers, cicatrices, and traumatism by pressure or friction; cutaneous diseases; systemic affections (syphilis, tuberculosis); and osseous disease.

Pathology.—Even macroscopically the elephantiasic mass is seen to be built up of hypertrophic elements representing all the tissues of which the part is composed. The knife with difficulty divides the homogeneous, whitish, and lardaceous mass, from which on pressure exudes a fluid of similar color. The subcutaneous connective tissue is found relatively much more enlarged and sclerosed than the epidermis and derma; though when section is made through the rugous and warty skin described above, all the elements of the papillary layer, rete, and stratum corneum are seen to participate in the changes described in connection with the pathology of verruca. Here and there are loculi filled with fluid lymph. The sheaths of the blood-vessels, lymphatics, nerves, and the bones, muscles, and aponeuroses are also thickened, solidified, and occasionally agglutinated, so as to be almost indistinguishable in the mass of uniformly sclerosed tissue. The pigmentation of the derma is marked, the nuclei of the connective-tissue cells are multiplied, and the cutaneous glands intact, hypertrophied in their epithelial linings and investments, or, at a later stage, atrophied.

It is evident that in many cases, as Virchow has pointed out, the earliest of the changes to be noted occur in the lymphatic glands and vessels, the whitish and yellowish lymphatic fluid which then accumulates in the tissue resulting from obstruction of the lymph-channels. In some of the remarkable cases on record the lymphatic obstruction is the prominent feature of the disease, and the elephantiasic enlargement is subordinate in gravity to the former condition. Such are, for example, the noteworthy instances in which the lymph distends multiple cutaneous vesicles, after rupture of one or more of which the fluid streams away to a dangerous extent.¹

Diagnosis.—The striking deformity which characterizes elephantiasis will always suffice for its recognition. In the earliest stages of the disease, when there is merely œdema or an erysipelatous or eczematous condition of the skin, it would be difficult, if not impossible, to decide as to the future of the disorder, especially in a locality in which only sporadic cases occur. A symmetrical hypertrophy of both legs and both feet, developing in America, even though described as "elephantiasis," should carefully be studied before a diagnosis is made of the particular disease here considered. The same might be said of elephantiasis of but one inferior extremity. A patient with an extensive deforming induration and enlargement of the right leg and foot, accompanied by pigmentation and a well-marked warty condition of

¹ For a fuller description of this class of cases the reader is referred to Busey's monographs on *Occlusion and Dilatation of the Lymph-channels*.

the skin, who had been pronounced the victim of idiopathic elephantiasis Arabum, had received a fracture of the upper third of both bones of the same leg during the previous year, and had since the accident constantly worn a tight bandage encircling the limb at the seat of the injury. The deformity rapidly disappeared under the application of a roller bandage extending from the toes upward.

A peculiar and rare, though characteristic, deformity of the labia majora of women—most commonly the labium majus of one side—results from a tertiary syphilitic, gummatous infiltration which must be distinguished from elephantiasis. In cases of this kind the history of the patient and the relative inferiority as to bulk of the affected organ point to the nature of the disease. The syphilitic labium rarely exceeds the size of a large fist.

A gigantic, hypertrophied mass of elephantiasic type is occasionally to be discovered in the lower extremity of only one side in patients who have been for many years the victims of an unrecognized and long-untreated syphilis. Even when the leg is many times its normal size and weight, and its contour lost in a thickened and roughened epidermis resembling the bark of a tree, the diagnosis may be made by discovering here and there in the depth of the mass circular and characteristic scars of healed gummatous ulcers.

Treatment.—In the early stage of elephantiasis the febrile condition of the patient and the localized cutaneous inflammation are to be treated by the measures appropriate for the relief of these conditions. Quinine, especially in malarial districts, is of the highest importance. When the elephantiasic development is established, if the genitals are involved the knife of the surgeon offers the best prospects. The result of such interference, both in the genitalia and the extremities, has in many cases been brilliant, though the mortality of such severe operations is necessarily great. When the lower extremity is involved it should be maintained in a horizontal position, its ulcers if possible be healed, its excrescences removed, its circumscribed inflammations resolved, and then elastic compression be carefully and skilfully maintained by means of a rubber bandage. The toes are first separately enveloped, then the foot and ankle, and lastly the leg. The results are sometimes highly satisfactory.

Ligation and digital compression of the main artery supplying the elephantiasic leg have occasionally been followed by transient improvement. Instrumental compression has at times resulted in severe ulceration and a reawakening of the erysipelatous affection. Multiple punctures and incisions, made with a view to giving exit to the fluids contained in the mass, have been attended by no greater success. The main obstacle in all these surgical procedures is the lymphangitis which so frequently complicates the situation. None of them promises so well as nerve-stretching, which in a few isolated cases has been followed by noteworthy results. Excision of a portion of the sciatic nerve has also been followed by satisfactory changes. The use of the galvanic current has, when long continued, accomplished resolution of engorged masses of tissue. Elastic compression in the horizontal position for all cases not warranting nerve-stretching may be regarded as

the wisest course when the extremity is involved. For the local treatment of the pachydermia proper, green soap, mercurial ointment, and bathing with hot or cold lotions may advantageously be employed. For patients whose disease is acquired in countries where the deformity is prevalent a change of climate is of the highest importance; and, having in view the social surroundings and habits of most victims of the disease, it is scarcely necessary to call attention to the need of a proper hygiene, diet, and tonic regimen.

Prognosis.—The future of a patient may be regarded as most favorable when the disease exhibits an early tendency to respond favorably to appropriate treatment, and when circumstances permit of a resort to the best therapeutic measures which can be adopted, such as change of residence, persistent and careful dressing of the affected part, and the removal of any exciting cause of the disease, such as neoplasm, an indurated cicatrix, etc. In the severer cases a fatal result may occur early in the disease; but usually life is prolonged, burdened by the inconvenience of the enormous elephantiasic mass in comparison with which the rest of the body often seems to serve as a mere appendage.

CLASS V.

ATROPHIES.

LEUCODERMA.

(Gr. λευκός, white; δέρμα, skin.)

(ACHROMIA, LEUCASMUS, PARTIAL ALBINISM.)

ABSENCE of the pigment of the skin and hairs giving rise to conspicuous disfigurement is naturally most frequently encountered in those races of mankind whose skins are most abundantly provided with such pigment. The absence of pigment may be congenital or acquired, and be partial or universal. Some confusion has been produced by the arbitrary distinction established by authors between the names intended to designate these several varieties of achromia or leucopathia. In the following pages leucoderma is the name employed to designate the pigment-atrophy which is partial and congenital; albinismus, that which is universal and congenital; vitiligo, that which is acquired.

In leucoderma, the patients being most often of the colored races, one or several whitish or rosy-whitish patches or bands, varying in size, outline, or situation, may be seen at birth unprovided with pigment. These patches may have a symmetrical arrangement, in which case they commonly observe the areas of distribution of one or more cerebral or spinal nerves; or they are asymmetrical in distribution. They are usually of circular outline, and may be found upon the scalp, face, nipple, breast, and genital and other regions. The hairs found upon such parts are equally destitute of normal color, being usually white. Negroes thus marked are generally termed "piebald," and the integument similarly affected in persons of other races has long been recognized as the "pied" or "piebald skin." These blemishes when symmetrical, like pigmentary nævi, exhibit a striking analogy with the symmetrical arrangement of the spots, bands, and stripes to be recognized in the furs of many of the lower animals. The outline of the patch may be abrupt, or it may gradually shade into that of the adjacent integument. At times islands of pigmented skin are visible within the non-pigmented areas. The changes in these patches during later life may be insignificant, or they may individually increase in size with age, or even multiply. Rarely they regain pigment in later life. In no case is there an excess of pigment deposited at the border of the patch.

This condition is practically remediless.

ALBINISMUS.(Lat. *albus*, white.)

(COMPLETE CONGENITAL LEUCODERMA.)

Symptoms.—The term albinismus is here limited to the congenital conditions of achromia induced by universal absence of cutaneous pigment.

This deformity is peculiar to individuals known as “albinoes” (Kakerlaken; Dondos), isolated instances of this anomaly occurring in all races, but more frequently among those having normally a hyper-pigmentation of the skin, such as negroes. In the subjects of this anomaly the skin has a milky-whitish, transparent, or rosy-tinted hue, and is usually of delicate texture; the hairs are silky and yellowish, whitish or snowy-white in color; the iris transparent or pinkish; and the pupil, in consequence of defect of pigment in the choroid, is also reddish or pinkish. There are, as a result, nyctalopia and heliophobia, with frequent nictitation, pupillary variations, and the semblance of myopia. The pinkish hue of the skin in these individuals is due only to its translucency and vascularity. The defective condition of the pigment is usually unchanged throughout life; but in no other respect, save as to pigment-anomaly, does the skin of the healthy albino indicate disease.

Many persons thus deformed, however, are far from vigorous. It has been observed that some albinoes are physically inferior to the average of persons of the same sex, both in stature, weight, mental activities, and powers of resistance to disease. There are, however, numerous striking illustrations of the reverse of this, and we have had under observation a number of albinoes in one family in which alternations of non-pigmented with normally pigmented children exhibited no difference whatever in sturdiness and vigor. Many enfeebled albinoes are simply illustrations of the wretchedly unwholesome life of persons imported for exhibition into foreign countries.

Etiology.—Inheritance is evidently a strong factor in the production of this and similar pigment-anomalies. Alternations in birth of white and of black children in one family have been recorded, yet it is unusual to find albinoes in two succeeding generations, an occurrence of no great rarity in inherited affections.

The condition is remediless; though it is probable that transfusion with the blood of a vigorous black-skinned African would largely modify the color-characteristics of the pure albino.

VITILIGO.(Lat. *vitium*, a blemish.)

(ACQUIRED LEUCODERMA.)

Symptoms.—The disorder is one observed among the several races, often in the negro, and not rarely among those of Aryan descent. It commonly occurs without the slightest appreciable disorder, subjective

or objective, save that betrayed to the eye in the color-changes of the skin. One or several rounded, or very irregularly shaped, smooth, and well-defined, pale or milky-white lines, streaks, or disks appear, often bordered at the periphery by an integument which assumes a light- or dark-brown or chocolate shade, this hue being by contrast most noticeable immediately at the contour of the patch, and imperceptibly fading into the normal color of the outlying integument. The hairs or lanugo-filaments growing from the affected area may or may not be blanched; most commonly they are, a condition particularly conspicuous when, as is not rarely observed, a vitiliginous disk extends from the back or the side of the neck well into the scalp, in which case the outline of that portion of the scalp involved is clearly defined by the whitened pilary growth. Lesser describes a condition termed by him *POLIOSIS CIRCUMSCRIPTA ACQUISITA*, in which the hairs were thus blanched in a single area of an unaffected scalp, an observation which is confirmed in many cases.

The most common seats of the disease are the face, the neck, the backs of the hands, the genitals, and the extremities. Upon the backs of the hands the disfigurement is usually more conspicuous in summer than in winter, a circumstance which probably explains the reported instances of recurrence and total disappearance of the disease in successive years. The changes are due to a deepening of the pigment in the normal areas on exposure to the sun, thus making a more striking contrast with the non-pigmented spots.

The course of the affection is exceedingly slow; there may be for years no apparent extension of any involved area or the achromia may progress by peripheral extension and by the coalescence of relatively small affected areas until a large portion of the trunk, the thighs, the buttocks, or other part of the body is involved. Hall¹ reports the case of a dark mulatto who became "perfectly white," with the exception of a patch on the chin. Levy² reports three instances of total disappearance of pigment. It not infrequently happens that the loss of pigment is so extensive on the face, hands, and other regions that the eye of the observer is struck no longer by the unusual whiteness of the involved patches, but this whiteness being generalized and apparently that proper to the person, the remaining normal areas appear to be hyperpigmented. Patients with vitiligo frequently suppose that the whitened areas are normal, and the darker ones abnormally pigmented. Patients of lymphatic temperament and blonde complexion (often women in early adult life) will occasionally apply to a physician for relief of dark patches on the skin of the face. Examination discloses faint lines, ribbons, or streaks of pigment about one or both cheeks, the temples, or the lips. But careful scrutiny recognizes an undue whiteness of the skin, with exceedingly faint and irregular outline near or next to these pigmented portions of which complaint is made. In these cases care is necessary to make a diagnosis between vitiligo and chloasma.

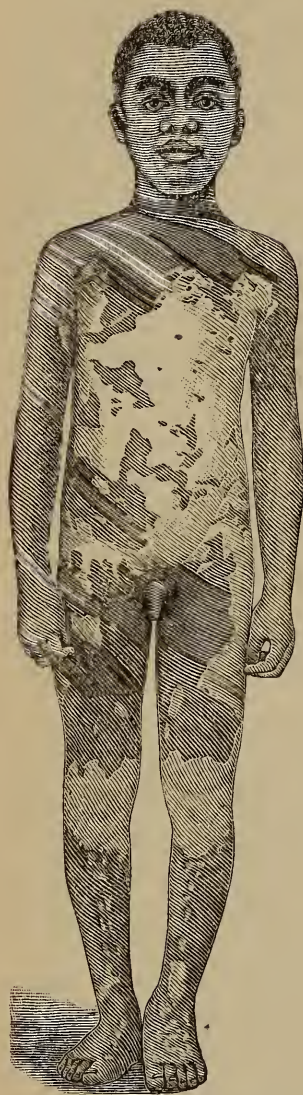
As in several of the other pigmentary disorders of the skin, the

¹ Louisville Med. News, 1880, x., p. 148.

² Recueil de Mém. de Méd. de Chir. et de Pharm. mil., 1865.

patches of vitiligo may be symmetrical in distribution, with their outlines limited to the areas supplied by certain nerves. The disorder shows a tendency to spread, though as a rule a limit is reached eventually beyond which the atrophy does not progress. In exceptional cases the parts which have lost pigment again acquire it.

FIG. 61.



Vitiligo in a negro boy.
(Piffard's case.)

In vitiligo, aside from the dyschromia, the skin is normal. The health of the subjects of this disorder is usually unimpaired. A morbid mental condition, especially in women of middle life, is often produced when the disfigurement involves the facial region.

Etiology.—Vitiligo occurs in both sexes and in individuals of all complexions and ages, though it is commonly observed among women and in early or middle life. It is at times coincident with scleroderma, lepra, variola, and other diseases with similar cutaneous symptoms, though it occurs independently of all such. Its etiology must be regarded as obscure, although there are strong probabilities that it is due to the influence of perturbed innervation. It is frequently found in connection with functional and organic diseases of the nervous system and with peripheral nerve-lesions. The disorder is of more frequent occurrence than dermatological statistics tend to show. Many persons who are the subject of vitiligo of an inconspicuous part of the body do not consult a physician with regard to the nature of the disease, as it occasions no physical distress.

Pathology.—The pigment normally present in the deep rete-cells is absent in vitiligo-spots, but greatly increased and deepened at the borders of the areas. In the corium are cells which contain pigment-granules. These are especially numerous at the margins of patches, where blood-vessels, follicles, and glands are surrounded by

many oval, stellate, and branched pigment-cells. The probable nature and origin of these cells are considered with chloasma. Leloir and Chabins have demonstrated atrophy of the subdermal nerves in patches devoid of pigment. Other changes in the skin have not been noted.

Diagnosis.—The diagnosis is based on the presence of achromia, with usually a hyperpigmented border, and the absence of all other symptoms or changes, such as would be found in tinea versicolor, morphea, lepra, or syphilis. From the chloasmata, which are always accompanied by hyperpigmentation, vitiligo is readily differentiated.

Treatment.—Much chagrin will be saved both physician and patient by practically regarding vitiligo as not amenable to treatment. Patients occasionally recover while under treatment, which, however, has gen-

erally contributed but little to the result. Arsenic and iron internally, recommended highly by some authors, have repeatedly failed to accomplish any appreciable results as regards dyschromia. By efforts directed to the removal of the hyperpigmentation in the border of the achromic patches the disfigurement may be somewhat lessened. The method of arriving at this end is described in connection with the treatment of chloasma. It is possible that further experimentation with hypodermatic injections of pilocarpine, that have in a limited number of cases been followed by disappearance of the disease, may warrant a less unfavorable view of the results of treatment. Savill¹ reported a return of normal color in vitiliginous patches to which he had applied pure carbolic acid.

Prognosis.—The health of the subject of the malady is not impaired. The disease is practically incurable, progressing usually until it has obtained a maximum of development; and then, as a rule, remaining unchanged throughout life.

CANITIES.

(Lat. *canus*, white.)

(TRICHONOSIS CANA, POLIOTHRIX, HOARINESS, POLIOSIS.)

Symptoms.—In this anomaly the hairs appear in all shade of whiteness, from dirty gray or yellowish white, to a steel gray or silvery white. This may be either a general or a partial, congenital or acquired, physiological or pathological, prematurely, rapidly, or gradually acquired condition. General congenital whiteness of the hairs is seen in albinismus, where pigment has never colored the filaments. Partial congenital whiteness is occasionally seen in patches, limited in size and varying in color from pure white to a deeper hue, that from birth do not receive pigment in due proportion, thus contrasting with the pigmented filaments by which they are surrounded.

Physiological decoloration of the hairs in variable shades is the well-known result of advancing years. When premature, it may result from pathological causes or be due to individual or inherited peculiarities. It may occur gradually or suddenly; in the former case the hairs usually pass through varying shades of gray to white, and this at any period after (occasionally before) puberty, though commonly after middle life is reached. Recurrence to the darker shades is rarely noted. Leonard, of Detroit,² cites a number of curious instances in which changes of this sort have occurred. Generally, however, canities of advanced years is progressive and permanent, occurring earliest on the temples and the beard of man, then involving the vertex of the head. Finally, the hairs of the entire body-surface undergo similar pigmentary loss. TRICHONOSIS VERSICOLOR (Wilson), "RINGED HAIR," occurs in sound individuals of both sexes, the pilary filaments having the appearance of a foreign body interspersed among the hairs. Close examination reveals the presence of alternating rings

¹ Brit. Jour. of Derm., March, 1898.

² The Hair, etc. Detroit, 1880.

of different shades of color twenty to thirty to the inch of the hair-shaft.

It should be remembered that the coloring of the hairs of the head is, to a greater extent than is commonly appreciated, subject to variation from the operation of external causes. Thus, washing the hair with alkaline solutions has a bleaching effect, while profuse sweating, inunction with fats, subjection to smoke, and the temperature-changes of the summer have the contrary influence, the last named being possibly associated with increased sweating in the hot season.

Cases of sudden blanching of the hairs, occurring, for example, in a single night, are sufficiently numerous and well authenticated to be admitted as among the rare possibilities of a clinical experience. Nervous disorders, both centric and peripheral, such as long-continued mental depression, melancholia, paralysis, neuralgia, and traumatism of nerves or of nervous centres, may be followed by more or less rapid, general or partial, and permanent canities. The same result may follow wasting disorders, such as typhoid fever, tuberculosis, syphilis, and malarial (Chagres) fever, in which cases, as distinguished from the others, pigmented hairs may eventually replace those which were white. The first hairs springing from a patch of alopecia areata in which repair is in progress are often white or whitish, and are replaced later by those of normal color. Cases are reported in which the pressure of a truss or of a corset has produced patches of vitiligo and canities.

Landois has shown that many instances of suddenly occurring canities depend solely upon the rapid appearance of air-bubbles in excess of the average number in the hair-shaft.

Etiology.—Whitening of the hair may be senile in origin, in which case it is customary to declare it to be physiological; or be due to heredity; to deficient nutrition or innervation of the hair-follicles; to functional or organic nervous affections (fright, facial atrophy, etc.); or to local chemical action upon the hairs. Premature canities in young adults is often associated with the occupations of life, being much commoner in men who from necessity have the head habitually covered and who yet lead sedentary lives.

Pathology.—The color of the hair is dependent upon the pigment situated in the matrix and between the horny cells, and upon the natural yellowish color of the dried horny cells. In source and character the hair-pigment is undoubtedly identical with that of the skin in general. This has been considered with chloasma. Decoloration of the hairs may be due to failure of supply or to removal of pigment; to unevenness of the hair-surface (by which light is refracted); or to air-bubbles between and within the fibre-cells. In senile and pre-senile decolorations there is commonly actual diminution of pigment. Rapidly occurring canities is ascribed to the sudden appearance of air-bubbles in quantity in the shafts of the hair. Alterations of color in the hairs are attributed to successive periods of activity and rest in the pigment-producing cells.

Treatment.—The chief means of remedying premature canities is by the action of dyes, which are, in the main, compounded with solu-

tions of silver nitrate, lead acetate, and ferrous sulphate. The main objections to their use are the disagreeable coloring of the scalp which results from incautious use of the dye, and the consequent liability to irritation of the surface. When applied to the hair alone these substances are not known to have a deleterious effect upon the health. Kaposi gives the following formulæ for hair-dyes:

To obtain a black color—

R	Argent. nitrat.,	gr. xv;	1	5	M.
	Ammon. carb.,	gr. xxiij;	1		
	Unguent. adipis,	℥j;	30		

Or

R	Argent. nitrat.,	℥j;	4	1	M.
	Plumb. acetat.,	gr. xv;	1		
	Aq. Cogn.,	gtt. xv;	1		
	Aq. ros.,	ad f ℥iij;	ad 90		

To obtain a brown shade—

R	Acid. pyrogal.,	gr. xv;	1	2	M.
	Aq. Cogn.,	℥ss;	2		
	Aq. ros.,	℥jss;	45		

Anderson first applies a lotion of mercuric chloride, 2 grains to the ounce (0.133 to 30.), and follows this with a solution of sodium hyposulphite, 1 drachm to the ounce (4. to 30.), for the production of a jet-black shade. In the way of constitutional treatment, he suggests in cases of accidental presenile blanching strict attention to the general health and arsenic internally.

ALOPECIA.

(Gr. ἀλωπηξ, a fox.)

(CALVITIES, DEFLUVIUM CAPILLORUM, DEFICIENCY OF HAIR, BALDNESS. *Ger.*, KAHLHEIT.)

The simple term alopecia is no longer descriptive of a disease, but only of a symptom, loss of hair, which occurs in a large number of morbid and even physiological states. For convenience of description the alopecias may be enumerated as congenital alopecia, senile alopecia, premature or presenile alopecia, and alopecia areata.

• **Congenital Alopecia.**—In rare cases there is a partial or a complete absence of hairs at birth, in consequence of arrested development of the pilary system. Generally, however, these appendages of the skin are merely of tardy appearance, their eruption being extraordinarily delayed, as in retarded dentition. In some instances the hair falls after birth and never returns. When the alopecia persists to adult years, as is rarely the case, there is usually defective development also of teeth and nails.

In localized congenital alopecia hairs rarely develop after maturity, and here, also, abnormalities of teeth may be coincident features. In

a case of congenital alopecia examined by Schede¹ the sebaceous glands were found opening on the free surface of the skin. In the deeper part of the cutis straight or convoluted hair-rudiments were visible in the tubules, without perceptible internal cavity, which corresponded with the external root-sheath.

Senile Alopecia.—The baldness of old age, whether occurring upon the vertex so as to produce a tonsure like that of the priest, or whether limited to the frontal region, or so extensive as to involve nearly the entire calvarium leaving a fringe of hairs at the occiput and temples merely, is always remarkable for its symmetry. There is, hence, a certain degree of dignity added to the appearance of the head that an asymmetrical loss of hair does not produce. It may occur at varying ages of advanced life, and is frequently traceable to an early seborrhœa sicca or alopecia furfuracea. It is much commoner in men than in women, largely because of the difference in the manner of covering the head in the two sexes, women usually wearing an exceedingly light dress for the head, while men encase the latter with tight-fitting caps or hats which interfere with proper aëration of the scalp. Individuals of the male sex, also, in consequence of their usually wearing the hair short, bestow far less time upon the care and dressing of it. In uncivilized races these differences are less marked, men pay great attention to the ornamentation of the scalp, and senile baldness is of less frequent occurrence.

The bald surface, as a rule, is smooth and shining; it is occasionally the seat of a seborrhœa oleosa. The hair-follicles, with their accessory sebaceous glands and occasionally the skin itself, are often in a state of atrophy, though there may be dilatation of the sebaceous glands. There is commonly blanching of the hairs, which are gradually shed, as also of those which remain, though the canities is not constant. This condition is much less frequent upon the surface covered by the beard and pubic and axillary hairs, where, according to Michelson, the hairs in advanced years are often denser than at other periods of life.

Premature or Presenile Alopecia (premature calvities) is that form of acquired baldness which occurs in individuals who have not attained advanced years. Idiopathic and symptomatic forms are recognized by writers, though it is probable that a definite cause exists for cases occurring in individuals under forty-five years of age.

The **IDIOPATHIC** variety does not originate in the diseases of the scalp or of the general economy that are recognized as effective in the production of other forms of baldness. In many cases, however, classed as idiopathic a careful search will reveal the presence of a seborrhœa. It is, as with senile alopecia, more common in men than in women, and is in the former sex decidedly prevalent among those leading sedentary lives. The loss of hair may be produced either rapidly, or, more commonly, slowly, and at any period after the puberal epoch. It is always symmetrical and usually remediless, partial calvities being the permanent result of the process. The pilary growth may gradually and evenly recede from the forehead, or, what is more frequent, recede from the temples on either side of the median line,

¹ Arch. f. klin. Chir., Bd. xiv.

leaving a more vigorous crop extending centrally toward the root of the nose, or produce the effect of the tonsure described above. In many families there is a predisposition to this premature loss of hair, usually in the form of the receding temple, that may be recognized in the males of succeeding generations.

SYMPTOMATIC PRESENILE ALOPECIA may result from a number of systemic and local conditions. Loss of hair (DEFLUVIUM CAPILLORUM) is common after typhoid and other fevers, and after other conditions interfering with the nutrition of the scalp. Frequently the hairs do not fall for some weeks after the patient has recovered from the constitutional disturbance, but remain in their follicles until pushed out by the new hairs, or until gradually pulled out by the use of brush and comb. In these cases there is usually a general and symmetrical thinning of the hair. The loss is not permanent, as new hair gradually replaces that which has fallen. The alopecia of the early periods of syphilis is of this order, but occurs in characteristic patches. A slower loss of hair is seen in many cachectic conditions such as tuberculosis, diabetes, leprosy (in which the alopecia is limited often to the eyebrows and eyelids), and myxœdema.

Of all the local causes of alopecia, seborrhœa in some form is the most frequent.

ALOPECIA FURFURACEA, PITYRIASIS CAPITIS, OR ALOPECIA PITYRODES CAPILLITII.—Losses of hair varying from moderate thinning of the growth to considerable symmetrical baldness, usually of the vertex, accompany the pityriasic forms of seborrhœa or eczema seborrhœicum of the scalp. The affection is exceedingly common, especially in men.

The disorder, essentially chronic in course, is usually first manifested in early adult life, though persons of both sexes, from twelve to fifteen years of age, may at these ages display typical forms of the disease. After the condition known as DANDRUFF has existed for some months or years the subject of the affection discovers a relatively large loss of hair from the scalp, producing thinness of the growth upon the vertex, near the brow, or over the temples. The hairs, when examined *in situ* upon the scalp, are shortened, dry, harsh, lustreless, and rarely well anointed with sebum. They are rebellious to comb and brush, and project irregularly from the brushed surface. Those shed from the scalp, especially of men, are found to be nearer in type to the lanugo- or downy hairs than those which fall physiologically from a vigorous growth of hair in a healthy subject; that is, they are short, thin, pointed, and often with an indistinct medulla.

At the same time the scalp is in process of incessant desquamation, the scales usually being of pityriasic type, and exceedingly abundant so long as the alopecia is not complete, after which the epidermal catarrh soon disappears. The mealy, bran-like scales are shed in a fine shower upon the clothing of the patient, and, the disease being more common in men than in women, its traces are often distinct upon the collar of the coat after the fingers have been passed through the hair. The same flour-like, whitish and grayish scales are distinct and plentiful among the hairs to which they cling, and they can also be recognized

over the scalp-surface when the latter is inspected with care. Itching is often marked; the scalp may be scratched and torn by the nails, and is, in some cases, reddened and thickened. The condition is prone, sooner or later, to develop the severer phases of seborrhœa and eczema seborrhœicum.

Other local causes of alopecia are found in various inflammatory disorders of the scalp, such as psoriasis, eczema, etc.; in morphœa, and lupus erythematosus; in syphilitic, tubercular, and other destructive lesions; in some forms of folliculitis (considered in the succeeding pages) in which the follicle and surrounding tissue are destroyed by suppuration; in ringworm and favus; and in traumatism, which may occur as a bruise or be the result of scratching or rubbing.

The forms of alopecia described above as encountered upon the scalp may involve also other hairy portions of the body, as of the axillæ and the pubes; and these also in variable degrees.

ALOPECIA AREATA is considered in a separate section.

Etiology and Pathology.—The causes of congenital alopecia are not known. Senile alopecia is attributed by many to the general atrophic changes which take place in the aged. This atrophy evidently will not explain the cases, often classed as senile alopecia, occurring in men under sixty or seventy who are in all other respects vigorous and well. Most cases of so-called idiopathic presenile alopecia are due to an unrecognized seborrhœa. The symptomatic alopecias should be studied with the conditions upon which they depend.

Treatment.—In symptomatic alopecias the underlying conditions, local or systemic, must be treated by measures appropriate to each case. The general health should always be considered, and any condition interfering with the nutrition of the scalp and hair should be removed as speedily as possible.

Local treatment is of importance in nearly all cases, and in general is directed toward stimulating the nutrition of the hair-follicle by producing in its periphery a species of transitory and artificial hyperæmia. This result is usually accomplished by daily brisk, but light, friction of the scalp with a brush, or by massage with the fingers, aided by the local employment of one or more of the alcoholic, oily, alkaline, and other stimulating applications described below. The hat should be light and well ventilated, and worn as little as possible.

Local treatment may often be preceded by shampooing with either the Sarg fluid soap, or combinations of glycerin, alcohol, and *sapo viridis* to meet the requirements of individual cases. The scalp after all such shampooings should be anointed with lanolin, plain or salicylated; vaselin; equal parts of lanolin, glycerin, and rose-water; the oil of benne; or scented castor-oil. In obstinate cases the nail-brush may be used vigorously over insensitive scalps at the time of shampooing. The ointment-bases named above may often be medicated advantageously with sulphur, resorcin, chrysarobin, tar, cantharides, or mercury. Instead of ointments, lotions containing cantharides, carbolic acid, capsicum, resorcin, mercuric chloride, ammonia, or *nux vomica* may be used. Formulæ for lotions and salves to be used in this way are appended:

R	Hydrarg. chlorid. corros.,	gr. v;	33	
	Spts. vin. rectific.,	℥ij;	60	
	Acid. acet. dil.,	℥ij;	8	
	Glycerin.,	℥ss;	15	
	Aq. ros.,	℥vj;	180	M.
R	Hydrarg. bichlorid.,	gr. iij;	20	
	Tinct. cantharid.,	℥ss;	15	
	Ol. amygdal. dulc.,	℥j;	4	
	Spts. rosmarin.,	℥j;	30	
	Spts. vin. rect.,	℥ij;	60	
	Aq. destill.,	q. s. ad ℥vj;	q. s. ad 180	M.
R	Sulphur. præcipit.,	℥j;	4	
	Lanolin.,	āā ℥ijss;	āā 10	M.
	Glycerin.,			
	Aq. rosæ,			
R	Hydrarg. chlorid. mit.,	℥iv;	5/33	
	Hydrarg. ammon. chlor.,	℥ij;	2/66	
	Vaselin.,	ad ℥j;	ad 30	M. [Bronson.]

The addition of acetic acid to a scalp-lotion seems to favor penetration of other remedies. Pilocarpine hypodermatically has given good results. Further suggestions regarding the details of treatment of alopecia, and the special remedies recommended for alopecia furfuracea, are given under *Seborrhœa sicca*.

Prognosis.—Congenital, senile, and many of the so-called presenile idiopathic alopecias are practically remediless, though in the two last forms further loss of hair can be prevented or greatly retarded by proper treatment. The symptomatic alopecias in which there is destruction of the hair-follicle, as in lupus erythematosus, syphilitic ulcers, favus, and some forms of folliculitis, are permanent; those due to systemic disorders and to local inflammations are usually temporary. In alopecia furfuracea persistent treatment will prevent further loss of hair, and in recent cases may produce a new growth.

ALOPECIA AREATA.

(Lat. *area*, a vacant space [*arere*, to wither, Fox].)

(PORRIGO DECALVANS, TINEA DECALVANS, AREA CELSI, AREA JOHNSTONI, ALOPECIA CIRCUMSCRIPTA. *Fr.*, PELADE.)

The hair-loss is limited usually to the scalp, but may occur upon the beard, the genitalia, axillæ, brows, eyelids, and the general surface of the body. Cases occur, especially in early childhood, in which the closest scrutiny with a glass fails to detect a single filament of hair upon any portion of the skin.

The disease commonly manifests itself by the sudden and complete loss of hair over a circinate, circumscribed patch, usually upon one side of the scalp, so rapidly effected that a first discovery of the fact may be made at the toilet of the morning. In other cases the loss of hair is gradual, the patch attaining large dimensions in the course of two or

three weeks. Less frequently an area of baldness will continue to extend peripherally for many weeks. Instead of one area, there commonly are several, which may develop simultaneously or at varying intervals.

The patches may be round, oval, circinate, or irregularly shaped, and may vary in size from that of a small coin upward. They may be so numerous as to disfigure the entire scalp, and though they touch at the borders they can scarcely be said to coalesce, as the individual areas are usually recognizable. Their surface is smooth, soft, whitish, and usually destitute of hairs. The affected scalp may be thinner and more lax than normal, and often is slightly depressed below the level of the surrounding skin, but in rare instances it is tumid and slightly reddened. As a rule, there are no subjective sensations, though the affected areas may be the seat of slight pruritus, or of anæsthesia, and are nearly always less sensitive to irritating applications than the surrounding normal parts.

The hairs at the periphery of patches that have attained their full development are normal in every way, and are firmly implanted in their follicles, but at the borders of areas which are still spreading the hairs are loose and fragile, often broken off near the surface, thus leaving short stumps which exhibit at the bulb a spade-like extremity or an attenuated point, the non-atrophied shaft thus contrasting with the wasted portion implanted below the cutaneous level. Crocker likens their shape to that of the exclamation-point. Newly formed areas may be covered in greater or less degree with these characteristic hairs, which, however, soon fall out.

The course of the disease is variable; it may persist for months or years without apparent change; or new patches may form while those of an older date gradually regain wholly or in part the pilary growth which, however, may be lost repeatedly in the same area. Shifting areas of baldness may in this manner invade the entire surface of the scalp, which yet at any one moment of time exhibits a loss of but part of its hirsute covering.

When the filaments begin to reappear there is commonly a fine, downy growth over the affected area, later replaced by a crop of thicker and stronger whitish filaments, which are always succeeded, in cases terminating favorably, by a growth of hairs as well colored, as vigorous, and as persistent as any which were at first lost. An odd appearance is often presented by patients who are improving, when the strong and white new hairs contrast vividly with the dark shade of those on the unaffected scalp.

This disorder, which is more common than is generally believed by physicians, may, in some cases, at its outset be preceded or be accompanied by symptoms of ill health, such as headache, malaise, inappetence, loss of flesh, or malnutrition. In other cases, cephalalgia, paræsthesia, pruritus, and formication of the skin of the scalp and other regions indicate disturbance of the nervous centres. Often, however, patients of this class are in sound health.

Among the unusual features of the disease may be mentioned the occurrence of alopecia in bands or streaks; at the site of an injury or

along the course of a nerve; or over the entire body, removing even the finest lanugo-hairs. Universal alopecia may occur suddenly, or as the result of a gradual thinning of the hair, or may follow the existence of the disease in characteristic areas. This variety of alopecia, which is fortunately rare, usually occurs after the middle period of life, but it may develop in the very young.

In some instances alopecia areata is associated with other cutaneous diseases. It is not rare to discover alopecia areata in patches which are also the seat of the vegetable parasites. A male patient, long psoriatic, under our observation exhibited a typical seborrhœa capitis, and later developed a no less typical alopecia areata.

The course of the disease in young subjects is usually toward a favorable result. There is hope, as a rule, when even the downiest and thinnest growth, requiring a good light and a glass for its recognition, can be appreciated. Even when so feebly attached that these filaments are removed with ease by the fingers or a brush, and when they spontaneously fall they may be replaced by crop succeeding crop of stronger filaments, which eventually persist. In serious cases, usually after the forty-fifth year of life, and in those of long standing, there may be absolute atrophy of the hair-follicles and a resulting remediless baldness.

There is some reason for believing that the disease has a stadium of evolution and involution, though its exact limits are not known. Few individuals fully recover the hair in less than one year. The majority attain the desired end within a period of two years. These limitations, however, apply to the asymmetrical forms of the disease in the relatively young. The symmetrical alopecia areata of the middle-aged is a far more formidable affection, though in many of these cases, when the loss is recent, proper treatment will restore the hair.

Few diseases are the source of greater mental distress than those of the class under consideration. The prominent deformity debars the subject of the malady from social relations of many kinds, and this intensifies the morbid feeling which every reflected view of the head awakens. This fact is particularly true of women. The successful management of these cases calls often for the supporting assurances of the practitioner.

ALOPECIA CIRCUMSCRIPTA SEU ORBICULARIS is a rare form described by Neumann in which the areas are much depressed, are the size of a pea or smaller, and are decidedly anæsthetic. The prognosis is unfavorable.

Etiology.—The question of the parasitic or neuropathic origin of alopecia areata is still undecided, though it has been the subject of extended discussion and observation. It is highly probable that many of the limited, asymmetrical forms of the disease, in which the patches increase by peripheral extension, are due to parasites not yet recognized. The efficacy of some such agency, is suggested in epidemics of the disease which have been reported both in France and in America, where entire companies of a regiment or numbers of inmates of public

institutions, have suffered from the disease in an apparently contagious form. Eichhorst, Thin, Von Sehlen,¹ Robinson,² Bowen, and others discovered in affected patches and about the bulbs of hairs in alopecia areata micro-organisms which were cultivated in generations, but which were not shown to be effective in the production of the disease *de novo*. In a series of three hundred cases Sabouraud found in the early stages of the disease a micro-bacillus. He obtained pure cultures, with which he produced typical areas in calves, rabbits, and guinea-pigs. He finds the same bacillus in comedo, acne, and seborrhœa, and believes that alopecia areata is an acute form of seborrhœa oleosa. The frequent coincidence of alopecia areata and tinea tonsurans suggests an etiological relationship.

The weight of evidence in favor of a neuropathic origin of some cases of the disorder is great, and is very generally accepted by authorities. The sudden occurrence of extensive symmetrical or of universal alopecia can hardly be explained in any other way. Mental emotion (anxiety, fright), anæmia, malnutrition, traumatism both general and local (falls upon the head, blows inflicting lacerated wounds of the scalp), and bodily injuries of the general surface have all been cited as effective. The nervous symptoms which often precede or accompany the appearance of the bald patches are strikingly suggestive, and the occurrence of the disease after shock of the nervous centres is significant. Cases of this type are classed by Michelson and others as *ALOPECIA NEUROTICA*. Max Joseph produced baldness in patches upon the ears of cats and rabbits by section of the second cervical nerve near the intervertebral ganglion.

Alopecia areata occurs with equal proportion in the two sexes, and among these irrespective of social condition. Of the partial and asymmetrical forms, the larger number of cases occurs in young subjects, from childhood to early adult life. The severe and generalized forms are more often encountered in middle-aged persons. In the latter class especially the disease is occasionally observed to follow the obscure disorders of the nervous centres due to sudden or prolonged undue excitation. In young subjects a peculiar repugnance to the ingestion of fat and meat may often be discovered.

Pathology.—The anatomical lesions in alopecia areata have not been recognized definitely. The hairs fallen from the surface, when examined with the microscope, are seen to be atrophied in bulb and shaft, as in other forms of alopecia. Fracture of the shaft is in some cases also noted, evidently an accident of the process.

As a result of careful examination of many pathological sections, Giovannini³ and Robinson⁴ believe the disease is primarily an inflammation of circumscribed areas of the corium, and especially of the sub-papillary layer. In a small patch of one week's duration Robinson found marked perivascular cell-infiltration in a limited region of the corium, the papillæ being but mildly affected, while the epithelium,

¹ Annal. de Derm. et de Syph., June, 1886.

² Monatshft. f. prakt. Derm., 1889, vii., p. 409.

³ Annal. de Derm. et de Syph., 1891, p. 921.

⁴ Merrow's System, vol. iii., p. 865.

rete, subcutaneous tissue, and glands were normal. Some of the hair-follicles were normal, while in others no papillæ could be found, and the hairs were wanting or imperfect. In cases of longer standing evidences of inflammation were more marked and extensive, and there were vessels with thickened walls and narrowed lumina. In some cases there was more or less atrophy of all elements of the corium, with destruction of the hair-follicles and sebaceous glands. Giovannini, who describes an invasion by leucocytes of the hair-follicle, considers the process a deep-seated folliculitis.

Sabouraud finds constantly in the early stages large numbers of his micro-bacillus surrounded by keratinized epithelium, forming a cocoon-shaped mass which occupied the much dilated follicle-neck. In the later stages of the disease he finds no bacilli, but describes inflammatory changes, atrophy of the follicle, and achromia of the basal layer, all of which he ascribes to the influence of local toxins.

Diagnosis.—Alopecia areata is to be distinguished from vitiligo of the hairy portions of the surface by the preservation of the pilary growth in the disease last named, the filaments, moreover, having usually a blanched and whitened look, due to the absence of pigment.

From ringworm and favus of the scalp the disease in question is differentiated by the suddenness of its onset; the absence of stumps of hairs, scales, crusts, and evidences of irritation in the involved area; the whiteness, smoothness, and complete baldness of the latter; and, above all, by the failure to detect with the microscope the evidence of the presence of a vegetable parasite. Ringworm and alopecia areata may coexist. In cases of so-called "bald-ringworm" the diagnosis must rest upon the microscopical findings.

The asymmetrical patches of seborrhœa of the scalp are recognized by the presence of the fatty plates pasting the hairs to the scalp-surface, as well as by the slow and very gradual onset of the disorder.

Other forms of baldness than those named above are all of gradual and, in their early stages, of symmetrical development. Those resulting from traumatic injuries of the scalp with cicatricial results, are easily determined as having such an origin.

Treatment.—One necessarily views with distrust all treatment for that disease which in the course of months or years usually terminates in spontaneous recovery, and in the meantime may bid defiance to each and every therapeutic measure. Nevertheless, persistent and hopeful management of even apparently desperate cases is occasionally rewarded by such brilliant consequences that, however slight may be the foundation for a belief in the value of the therapy employed, it deserves recognition and trial.

The hygienic management of every case is a matter of importance. The general condition of the nervous system should be considered and may call for changes in the habits of working, eating, resting, and exercising. Tobacco in every form should be denied to subjects of the disease. Iron, quinine, nux vomica, cod-liver oil, phosphorus and the hypophosphites, arsenic, and strychnine are often indicated, and used with great benefit.

There are few patients who are not benefited by daily salt-and-water

bathing of the entire body-surface, followed by brisk friction, especially over the spinal region. In the case of children this treatment must be conducted by a skilled hand. When practicable the cold douche is to be preferred.

In all cases in which the scalp is involved in either sex, and in which the special hypochondriasis of the disease is developed, a wig should be worn for the sake of its moral effect upon the sufferer. Its use, however, should be limited to social occasions, visits, etc., as the persistent wearing of a peruke indoors seems to lengthen the course of the disease.

The indication for local treatment is to destroy any parasites that may be present and to increase the physiological afflux of blood to the hair-follicles. With this end in view the affected parts are to be bathed daily in water as hot as can be tolerated, then dried, and rubbed with a stimulating lotion. After the lotion dries it is well to apply an oil or simple ointment. The articles usually employed are alcohol, ether, resorcin, formalin, turpentine, ammonia, camphor, cantharides, carbolic acid, oil of mace, croton-oil, tincture of nux vomica, tincture of capsicum, tincture of aconite, castor-oil, tar, iodine, sulphur, and the mercurials. All frequently fail. Several of these substances in combination seem at times to be of service.

The following is a formula, the ingredients of which may be varied to suit the indications in different cases.

R	Ol. ricini,	f $\bar{3}$ ss;	15	
	Acid. carbolic.,	$\bar{3}$ j;	4	
	Cantharid. tinct.,	$\bar{3}$ ss;	15	
	Ol. rosmarin.,	gtt. xv;	1	
	Spts. vin. rectific.,	ad f $\bar{3}$ iv;	ad 120	M.
Sig. For external use over the scalp with friction.				

The preparations containing sulphur, resorcin, pyrogallol, chrysophanic acid (which has the disadvantage of staining the hair), mercuric chloride, etc., given on a preceding page in connection with the treatment of seborrhœa capitis, are often valuable.

Formalin in solutions of 0.5 to 2 per cent. is sometimes efficient. It should be used with care, however, as it has occasioned severe dermatitis, and in several instances has given light hair a green color.

Jackson recommends liquor ammoniæ fortior, applied once or twice daily to the bald areas. Speedy return of hair in a patch of alopecia areata has followed the application of pure creosote and also of trikresol to the denuded surface, resulting in moderate vesication. The spirit of turpentine and pure carbolic and acetic acids have similarly been employed; but caustic applications are to be used with caution.

By many experts, having in mind the probability of a parasitic origin, epilation is practised to the extent of removing all the loosened hairs and a narrow zone of sound hairs about each patch. By others, shaving of the patches is substituted for epilation. The remedies selected for application are of the order of parasiticides; for example, mercurials, sulphur and its compounds, chrysarobin, pyrogallol, and iodine.

Repeated blisterings of the scalp with cantharidal collodion, croton-oil, spirit of green soap, and petroleum have also been employed with success. The ointment of chrysarobin has the disadvantage of staining not only the remaining hairs, but often also the face in consequence of the frequency of a transmission to that locality through the medium of the hands. When patients, however, consent to the use of chrysarobin it is worthy of trial, as its application has been followed by a vigorous growth of new pilary filaments. André employed ten hypodermatic injections of pilocarpine muriate in $\frac{1}{8}$ grain (0.008) doses, which resulted, in the case of a middle-aged woman affected with total symmetrical baldness, in an abundant growth of hair. Mercuric chloride has similarly been employed.

Faradization of the scalp with a stiff wire-brush, pushed to the point of producing moderate hyperæmia, has been followed by excellent results.

Wilson recommends :

R	Ol. amygd. dulc.,	f $\bar{3}$ j;	30	
	Capsici tinct.,	f $\bar{3}$ ij;	8	
	Liq. ammon. fort.,	f $\bar{3}$ j;	30	
	Spts. rosmarin.,	f $\bar{3}$ v;	150	
	Ol. limon.,	f $\bar{3}$ j;	4	M.

Another stimulating application is :

R	Ol. terebinth., }	āā f $\bar{3}$ ss;	āā 15	
	Ol. ricini, }			
	Origani tinct.,	f $\bar{3}$ j;	4	
	Ol. camphorat.,	f $\bar{3}$ j;	30	
	Liniment. volatil.,	ad f $\bar{3}$ ij;	ad 90	M.

Sig. For external use with a brush until the scalp is irritated.

Shaving should regularly be practised when in men the region of the beard is involved, as the deformity is thus rendered less conspicuous; and the bald surface should be stimulated frequently with one or several of the topical applications named above. Alcoholic solutions of resorcin (3 to 20 per cent.) or of mercuric chloride, $\frac{1}{2}$ to 1 grain (0.033–0.066) to the ounce (30.), are to be well rubbed over the patch or patches once or twice daily.

Prognosis.—From what precedes, it will be inferred that, as regards the relief of the baldness, the asymmetrical development of alopecia areata in youth is much more favorable than the symmetrical general disease of middle life, the latter being often remediless. In all cases the practitioner should actively persevere to the end. In no case should any encouragement be given as to complete relief within the year, though such exceptionally short careers of the disease are at times observed. The prognosis of the same affection of the beard is quite favorable, the disease, in young men, usually concluding its stadium in the course of about one year, with a favorable termination.

ALOPECIA FOLLICULARIS.

(FOLLICULITIS DECALVANS. *Fr.*, FOLLICULITES ET PÉRIFOLLICULITES DESTRUCTIVES DU FOLLICULE PILEUX, FOLLICULITES ET PÉRIFOLLICULITES DÉCALVANTES, ALOPÉCIES CICATRICIELLES INNOMINÉES, ACNÉ DÉCALVANTE, ETC.)

A series of closely related yet differing forms of folliculitis and perifolliculitis may involve the hair-follicle and its adjacent parts, destroying not merely the hair-bulb, but also the hair-papilla. As a result these conditions are followed by permanent alopecia and by the production of scars. The inflammatory nature of the process is usually though not always apparent. There is commonly a marked tendency to grouping of lesions, but they may be scattered and isolated. These disorders, studied with special care by French observers, are yet but imperfectly understood, and none is perfectly distinguished from the other dermatoses resulting in hair-loss.

The following types of disorders, many of them of great rarity, some observed by but few experts, are recognized by Brocq :

(a) Cicatricial alopecias in small irregularly disseminated plaques. These can be recognized when any scalp that has been the seat of a severe alopecia pityrodes is minutely studied. They are probably accidental results of that morbid condition, and are due to infection of the follicles with cocci.

(b) Cicatricial alopecias of the scalp, the eyebrows, and the face, in which minute glistening whitish points result, compared by Brocq to the lesions produced by destruction of the hair-papilla in electrolysis. It is possible that these lesions are due to the cause suggested for the first group.

(c) False alopecia areata ("pseudo-pelade" of French writers). In these cases the scalp about one or several hair-follicles becomes tumid and reddened. The hair is loosened in its pouch, and, whether it fall spontaneously or be removed by epilation, it is not replaced by another. The scalp is left whitish, smooth, ivory-like, depressed, thinned, and apparently atrophied, without trace of the new-formed downy hairs often noticed in alopecia areata. As distinguished from the last-named disorder, the advance of the patch may be in irregular lines rather than by extension of the rounded or oval circles formed in alopecia areata. Minute islets of alopecia exhibit the outlying evidences of disease.

(d) Cicatricial alopecias with a punctiform appearance of the plaque. Here there is an inflammatory involvement of the follicle and perifollicular tissue, with redness of this special region that disappears after atrophy has occurred. The sequel is a depressed whitish cicatrical tissue, marked here and there with pinhead-sized, reddish points where the circumpillary exudation is still in activity.

(e) Quinquaud's Disease¹ (Acné Décalvante of Paillet and Robert). Here miliary abscesses, punctiform, pinhead-sized and larger, involve the follicle. The hair originally piercing these suppurative lesions is loosened and falls, after which the follicle atrophies and the hair is no

¹ Bull. de la Soc. méd. des Hôp., 1888.

longer produced. The scalp is left dead-white, thinned, depressed, atrophied, and cicatriform, in patches as large as those visible in alopecia areata, but often irregular in outline. The follicles remain distinct and are not fused into a mass; they resemble the distribution of the lesions in coccogenous sycosis. In some instances this special follicular alopecia and scarring have progressed without suppurative involvement of the follicle, and in cases without any signs of inflammation.

(f) Lupoid sycosis (Brocq); Ulerythema sycosiforme (Unna). Special attention should be directed to this affection, as it is of great importance to distinguish it from the more common variety of coccogenous sycosis, which it strongly resembles.

This disease chiefly affects the male beard (a region more accessible than the scalp to the fingers), and its early symptoms are well-nigh indistinguishable from those of sycosis of the type named above. There are large and small, well-defined, follicular and perifollicular pustules, with redness, infiltration of the derma, scales, crusts, and characteristic deformity; but as the disease progresses the hairs are removed from the whole or a large part of the involved area, and there is left, after a relatively long period, occasionally suddenly produced, a cicatricial or keloid-like surface, which may be smooth or highly irregular.

In mild cases there is left a reticulum of narrow, scar-like, whitish lines, irregularly radiating over the surface, giving to the eye and touch the suggestion that they are depressed below the general level of equally irregular areas of the bearded chin or cheek. These areas may or may not be provided with hairs; in the former event the growth is stunted by the contracture of the encircling atrophy, where a species of fibrosis has occurred.

In severer cases there is left a more generalized cicatriform tissue, for the most part unprovided with hairy filaments. The process may be such as to interfere with the movements of the lips in articulation and mastication. These parts, for months after the disease has accomplished its evolution, are somewhat reddened. In both forms the centrifugal direction of the morbid process has been observed.

(g) In a last group are placed a few ill-defined cicatricial alopecias, beginning often with perifollicular, rather than follicular, pustulation, accompanied by redness of the affected part and the eventual formation of peculiarly persistent crusts. When these crusts fall a reddish, slightly scaly surface is left, followed by cicatricial atrophy and a patch with distorted and friable or fairly vigorous hairs, surrounded by an elevated rim. There is little definition; distinct patches of the disease are rarely seen. It more often affects the beard, and may be symmetrical. It may coexist in the same subject with acne-keloid, atrophic acne, and other varieties of that disorder, with which it is unquestionably related.

It will be seen from the foregoing that there has been recognized a series of interesting and important affections of the hairy parts, as yet not distinctly differentiated each from the other and the series from all others. Some of them may be found eventually to be varieties of lupus

erythematosus; others, of tuberculous infection of the scalp. Kaposi's dermatitis papillaris capillitii is without question to be recognized in some of the descriptions given. A few may be rare localized gummatous changes produced by syphilis. All are best treated with corrosive-sublimate lotions, 1 part of sublimate to 400; boric acid lotions and powders; and salves containing mercury, sulphur, and iodine. Galvano-cauterization of the pustules and inflammatory points has successfully been employed in some of the reported cases. All these disorders are well managed if treated in accordance with the principles suggested in the chapter on Sycosis.

KELOID-ACNE.

(ACNE KELOÏDIENNE, DERMATITIS PAPILLARIS CAPILLITII, PIAN RUBOÏDE [Alibert].)

Under this title Kaposi describes a disorder characterized by pinhead-sized, isolated or confluent elevations of the skin-surface, with interspersed pustules, which finally form cicatrilform plaques over which the hairs are either clustered in tufts or are totally absent. The pilary filaments are atrophied yet firmly fixed in their follicles, and they suffer elongation or fracture before withdrawal. The disease is encountered chiefly upon the nucha, the occiput, and the vertex. Papillomatous vegetations, crust-covered, hemorrhagic, and with a foul-smelling secretion, sometimes form, and eventually retract into a sclerotic tissue.

One of us has described typical cases of this disorder,¹ each of which concluded with the production of a keloid-like, cicatrilform, irregularly shaped but circumscribed elevation of the surface. This feature is that by which it specially differs from all other sycosiform disorders: The disease seems to be due fully as much to inflammatory processes in the subcutaneous tissue between the unyielding pericranium and the thick scalp as in the derma proper, and therefore it is not, strictly speaking, a dermatitis. Puncture, for example, of one of the pinhead-sized pustules commonly gives exit to the usual quantity of pus; but pressure upon the scalp in the periphery will at once be followed by the appearance of a still larger quantity of similar pus which evidently is expressed from a circumscribed subcutaneous abscess. When by such pressure the abscess-cavity is emptied it slowly fills with venous blood and produces a firm, semisolid elevation of the surface that subsequently undergoes sclerosis, and the starved hairs above behave in the manner described by Kaposi. The papules and plaques are formed in a similar way by the abundant supply of venous blood. The case of one of the patients presented at the clinic had been erroneously diagnosed by a surgeon as aneurismal in character. Puncture of all such semisolid, cicatrilform lesions is invariably followed by oozing of venous blood in abundance. The disease is chronic in character, is particularly liable to relapse in crops of pilary or peripilary pustules and papules, and it extends from nucha to vertex, avoiding the frontal and

¹ Jour. Cutan. and Ven. Dis., vol. i., No. 2, p. 33.

temporal regions. Over the bald or partially bald keloid-like elevations there is seen, in some cases, a species of seborrhœa in the form of more or less adherent, fatty crusts, with occasional characteristic tufts of hairs.

The disease seems to owe its special character to the anatomical peculiarities of its location. It occurs preferably at the points where the venous supply of the scalp is not only greatest, but where it is also in most direct connection with the large vessels beneath, and where an inflammatory process in the derma or subcutaneous tissues invites with readiness a pathological afflux of blood. Such a focus, limited beneath by the dense calvarium, and above by the relatively thick scalp, readily undergoes organization and sclerosis, the subsequent behavior of the hairs and hair-follicles being an accident of the process.

According to Besnier and Doyon, the disorder is a papillomatous development, likely to occur in this region of the scalp as a sequel of epilating, cicatricial (keloid) acne, eczema, or traumatism.

Sangster (in a paper read before the International Medical Congress in London, 1881) described a pigeon's-egg-sized tumor of the scalp, that Kaposi, who was present, recognized as a case of dermatitis papillaris capillitii.

Treatment.—The method of treatment to be employed in this rare disease can scarcely be described as established. The affected surfaces are first freed from subcutaneous abscesses by puncture and expression of the contents. Then the patch is washed with hot carbolized water, dusted with boric acid or iodoform, and a compress, moistened with an antiseptic solution, such as corrosive-sublimate wash, is firmly bandaged over the part. When pathological fluids no longer form under the scalp the patch is best epilated and anointed with a salve containing 1 drachm (4.) of precipitated sulphur to the ounce (32.) of scented vaselin, which salve may also be kept constantly over the part. When crusts form they may be removed by shampooing with green soap.

Internal treatment is suggested by the constitutional condition of the patient, and it should often include cod-liver oil, the ferruginous tonics, and a roborant regimen.

ULERYTHEMA APHRYOGENES.

This affection was first described by Taenzer in Unna's clinic. According to Unna, it occurs most frequently in blondes, is usually located in the eyebrows, from which it may spread to adjacent parts, including the scalp, or it may appear on the extensor surfaces of the upper arms. The condition may be no more than a persistent erythema, with small, elevated, horny papules at the mouths of the hair-follicles. The hairs are finer than normal and usually are broken off close to the surface. The disease may persist for years without further change, but in the severer forms atrophy, both follicular and interfollicular, results, so that small, depressed scars are surrounded by, or commingled with, the hyperæmic areas. The resulting alopecia is permanent and may be very marked, especially on the eyebrows.

ATROPHIA PILORUM PROPRIA.

Atrophy of the hair may be either symptomatic or idiopathic. Illustrations of the first-named condition are observed in phthisis, syphilis, seborrhœa, ringworm of the scalp, and in almost all general diseases interfering with the nutrition of the pilary growth. The filaments then become dry, lustreless, friable in both longitudinal and transverse diameters, and diminished in each dimension.

There are several recognized forms of idiopathic atrophy of the hair. One of these forms exists in those long hairs which are seen to be irregularly thinned or flattened in the shaft, and split at the point into two or more recurving fibrillæ, a condition noted, for the most part, in few hairs scattered among those of full development and vigor. This especially localized atrophy seems to be peculiar to one or more follicles merely; and is analogous to the condition in which there appears among the vigorous pigmented hairs of early life a single blanched filament.

FRAGILITAS CRINIUM.

Under this title a number of odd disorders, due to atrophy, and producing fragility, splitting, or curling in abnormal directions of pilary filaments, have been described by authors.

“UNDESCRIBED FORM OF ATROPHY OF THE HAIR OF THE BEARD” of Duhring.¹ In this affection, either at the bulb or at a variable distance, from it but within the follicle, there is fission of the hair-filaments into from two to four stalks with coincident atrophy of the bulb itself, and consequent irritation of the surface. Duhring's patient exhibited to a marked degree the species of hypochondriasis to which the subjects of disease of the hair seem specially prone. This disorder is not induced by a parasite.

In 1887 a gentleman applied for advice who was in a fair condition of general health, but the hairs of whose beard exhibited the symptoms described and figured by Duhring. Photo-micrographs of specimens of these hairs show clearly that in every case the fission of the filament extended completely to the base of the follicle and produced there irritation. The hairs over several square inches of surface were thus uniformly affected, normal filaments being in such areas absent. The interfollicular spaces, however, seemed to be abnormally widened, as though in these areas such normal hairs might have fallen in consequence of a species of alopecia. The disease was much more strongly marked on the chin than on the cheeks or the upper lip. The curling of some of the splinters was complete and characteristic.

TRICHORRHEXIS NODOSA.

(TRICHOPTILOSI [Devergie], NODOSITAS CRINIUM.)

Trichorrhæxis nodosa, first described by Wilks and Beigel, is a condition in which the hairs display nodose swellings along the shaft at irregular distances, the beard and moustache being most often affected,

¹ Amer. Jour. Med. Sci., July, 1878.

though rarely there is involvement also of the hairs of the scalp, the axillæ, and the pubes. The hairs are brittle, and fracture usually occurs through the node, leaving a broom-like mass of filaments project-

FIG. 62.



Trichorrhexis nodosa. (After SCHWIMMER.)

ing there, while the internodular portions of the shaft appear normal save for enlargement of the medulla (Fig. 62). The fragility of the hair at the centre of the node seems to depend upon the tension and consequent fissure of the cortical layer, which is greatest at that point.

The hair-bulbs are firmly adherent in their follicles. In a form of this disease common among the women of Constantinople Hodara discovered a bacillus, with pure cultures of which he reproduced the disease in a woman's hair. It is probable that the condition is always caused by a definite micro-organism.

According to Brocq, trichorrhexis nodosa is not produced by specific bacteria upon the shafts of the hair: though Spiegler¹ reports that when of occurrence upon the beard, bacilli and cocci, probably identical with those described by Hodara, are found in heaps, not merely on the shafts of the hairs, but in the walls and enclosed bulb of the hair-crypts.

Treatment is not satisfactory, as a rule. Sabouraud highly recommends daily applications of the following:

R	Hydrarg. bichlorid.,	gr. iij;	0/20
	Acid. tartaric.,	gr. viij;	0/40
	Resorcin.,	gr. xv-xxx;	1.00 to 2 00
	Alcohol.,		
	Æther., }	āā ʒjss;	āā 50/00 M.

Shaving has been followed in some of Kaposi's cases by good results; while Roeser² advocates the local employment of dilute tincture of cantharides.

MONILETHRIX (Ringelhaaren; Moniliform, Beaded Hairs; Pili Annulati; *Fr.*, Aplasie Moniliforme Intermittente) is a somewhat rare condition first observed by Smith (as described below), and since by numbers of others, including Luce, Anderson, Crocker, Lesser, and Behrend. A patient affected with this disease was exhibited at the International Congress of Dermatology held in London in 1896. Like the forms of fragility described above, the hairs are peculiar in exhibiting along the shaft a succession of rings or nodes, between which are narrower portions of the shaft, of a color lighter than that of the pigmented nodular or annular portions. The result is a characteristic checkered appearance of the hairs. Fracture always occurs in the internodular part, the fractured extremity having a characteristic brush-like stump. These conditions are evidently due to atrophic changes in the internodular parts, with better development in the pigmented and thicker portions of the shaft, the whole being due to nutritive changes which Virchow explains as due to a periodic aplasia of the hair-papilla. The obvious symptoms are clearly the result of a profound process, originating probably in the trophic nerves.

NODOSE SWELLINGS of the shafts of the hair. Smith,³ of Dublin, first reported a case of this disorder. Photo-micrographs of some of the hairs from this patient exhibit no fragility at the nodes, which beginning near the scalp are regularly displayed along the shaft, the fracture being always internodular. The spherical swellings along the shaft are also pigmented in a brown hue, and these pigmented nodose swellings, contrasting with the non-pigmented color of the unaffected

¹ Arch. f. Derm. u. Syph., Bd. xii., Heft 1.

² Annal. de Derm. et de Syph., 1877-1878, pp. 185 et seq.

³ Brit. Med. Jour., May 1, 1880.

portions of the shaft, give the hairs a singularly "checkered" appearance. No parasite is discernible in any of the specimens.

EXPANSIONS AND FISSURES OF THE HAIRS.—Michelson, under this title, discusses the abnormalities of the pilary system, instances of which are cited above, and he concludes as to the most of them that they are not separate diseases, but are expressions of an abnormal dryness and brittleness of the hairs due to atrophy. Cases of broom-like fissuring and division of the shaft into larger longitudinal splinters he regards as equivalent processes, both beginning by a cuticular loss and often merging into each other.

This view may be sound with regard to a number of these rare affections; but even a superficial examination of the longitudinal splinters shown in Duhring's and the authors' cases reveals the fact that the shaft represented by the sum of all its splinters is greater than that of the average hair in diameter and circumference. Even the naked eye can recognize this fact. The distention of the epilating-forceps in seizing a single hair, in the case of our patient, was equivalent to the grasping of as many sound filaments as are represented by splinters.

The therapy of these cases is not well determined. Michelson believes shaving to be useless, and he recommends systematic shampooing and oiling. Arsenic internally is worth trying in all cases in which it is not contraindicated.

LEPOTHRIX.

(Gr. *λέπος*, scale; *θρίξ*, hair.)

(TRICHOMYCOSIS NODOSA.)

This disorder, first described in 1869 by Paxton, and since recognized by Patteson, Pick, Babès, Barthélemy, and others, affects the hairs, chiefly of the axillæ and the genital regions. The filaments are dry, brittle, roughened, and loosened in their follicles. Under the microscope the shaft is seen to be either for a great part or for the entire length ensheathed in a concretion which may here and there be interrupted by furrows—a diffuse form of the affection. In a nodose form there are irregularly placed spherical masses, isolated from one another and more numerous toward the point than near the implanted extremity of the shaft. Crocker describes also circular and well-defined masses, lying upon but not surrounding the shaft, three times the diameter of the shaft, and containing fibres of the cortex that had been split by the concretion. The fracture may be clean or be brush-shaped. The nodular masses are exceedingly well attached to the shaft, and reddish brown to blackish in shade. At times reddish sweat of the axillæ, due to micrococci, has been a coincident symptom.

The nodes are found to be made up of chains of spherical or of elliptical micrococci, which penetrate the cortical layers of the hair with ease in regions of considerable moisture and sweat. The microorganisms at first obtain access by minute separations of the cuticle of the hair, and they eventually penetrate more deeply, breaking up the

cortical portions. While thus multiplying, a homogeneous substance, similar to the chitine by which the louse fastens its eggs to the hair, forms the bulk of the concretion in which the colonies of cocci are lodged.

The **Treatment** is by shaving and external applications of mercuric chloride (1 : 2000).

PIEDRA.

Piedra is a term descriptive of blackish and exceedingly firm nodes, partially or completely surrounding the hairs, and distributed without special order along any part of the shaft. The nodes are of the size of a pinhead, and, though occurring chiefly in the hairs of the head of women, have been seen also on the scalp and the beard of men. Desenne, Morris, Juhel-Rénoy, and Lion have reported cases. The disease belongs to the group of hyphogenous disorders. The nodes are seen to consist of masses of spores with abundant mycelium, readily cultivated but never penetrating to the interior of the hair. The hair-bulb remains intact, and the disease is at once relieved by shaving or cutting the affected filaments. It occurs chiefly in Cauca, Colombia, but has been recognized elsewhere. In the case of a young girl sent from the Chicago Eye and Ear Infirmary there were numerous jet-black, horny, and dense spherical masses attached to the hairs of the eyelashes of each lid of both eyes.

BEIGEL'S DISEASE.

(CHIGNON FUNGUS.)

This affection is discovered upon false hairs, which exhibit on their shafts dirty-brownish nodes, due to masses of parasites. The fungus has not definitely been distinguished. The nodes are irregularly strung along the shaft of the hair.

TINEA NODOSA.

This disorder, first discovered by Morris and Cheadle, affects the hairs of the beard or the moustache. The nodular concretions, which give the hair an irregular outline, are shown to be made up of fungus-spores a little smaller than those of *tinea trichophytina*. The hairs are brittle and break or split.

The **Treatment** is by shaving or clipping, with the application of parasiticides.

ATROPHIA UNGUIS.

(Fr., ONYCHATROPHIE.)

Atrophy of the nails may be a congenital or an acquired condition, in which there is deficient or defective production of nail-substance. The congenital forms are usually observed when the digits are poorly developed, and there is at the same time a deficiency of the pilary growth. The nails may be absent in these cases, or merely be tardy

of evolution ; occasionally they are seen, especially upon rudimentary or coalesced digits, in defective and distorted shapes.

Nicolle and Halipré¹ and C. J. White² report interesting cases of dystrophic disorders of the nails and hair extending through several generations of the same family. In the French cases the condition was seen in thirty-six individuals in six generations. One of those affected was an idiot, another a subject of hysteria, and another of feeble intellect. There were other evidences of a family tendency to mental and nervous deterioration. The hairs in the affected individuals were scanty, short, thin, light-colored, friable, and easily epilated. The most marked symptoms, however, were in the nails, which showed various grades of hypertrophy and atrophy, with periungual changes of an inflammatory type, due probably to injury or secondary infection.

In acquired atrophy the nail may be changed either in color, bulk, elasticity, firmness, shape, or position. Thus, the nail may be expanded and thin, narrow and acuminate, friable, furrowed, laminated, ridged, or otherwise distorted. It may uniformly or partially be lustreless, or singularly striped, or even irregularly speckled.

These changes in various combinations result chiefly from traumatism, such injuries, for example, as are common to the toes in the boot or shoe, and to the fingers when actively employed in the trades. Excessive heat and cold and constant maceration in chemical solutions (as among photographers, dyers, and druggists) often operate injuriously upon the nail-tissue. The inflammatory dermatoses, eczema, psoriasis, and the like are frequent causes of atrophy and dystrophy of the nail. All serious disturbances of systemic nutrition, as are incident to prolonged fevers, surgical accidents, tuberculosis, ataxic conditions, etc., interfere visibly with the nutrition and development of the nail. Syphilitic changes in the nail are commonly due to gummatous involvement of the matrix. Severe ulceration of the matrix is often followed by atrophic or other distorted conditions of the nail-substance.

The **Treatment** of these conditions is largely that of the disorders upon which they depend. The nails may often with advantage be scraped to a desired smoothness, well trimmed, shampooed vigorously with green soap, employing this also over the adjacent soft parts of the digit, soaked in unguents, and then protected by wax, leather stalls, etc., from injurious contacts. Arsenic internally is said to be useful in some affections of this kind.

ACHROMIA UNGUIUM (ALBUGO, "WHITE SPOTS"; Fr., DÉCOLORIZATION DES ONGLES).—This is a peculiar condition found in young and healthy subjects who exhibit a number of dead-white macules on one or several of the nails, usually of the fingers. Morison, of Baltimore, reported to the American Dermatological Association³ a case illustrated with a portrait, in which linear striæ, transverse to the long axis of the digit, appeared on the fingers. Since then we have observed

¹ Annal. de Derm. et de Syph., August and September, 1895.

² Jour. Cutan. and Gen.-Ūrin. Dis., June, 1896.

³ Vierteljahr. f. Derm. u. Syph., 1888, vol. xv.

a group of similar cases of the disease, one the subject of a portrait in oil, in which this condition existed. In all of our patients, young people of each sex, the fingers of the two hands were capriciously selected for exhibition of the peculiarity. It has been supposed that the presence of air in the nail-substance is responsible for the appearance. The affection is probably a trophoneurosis due to nutritional changes in the nail-matrix.

ATROPHIA CUTIS.

(Gr. *a*, privative, and *τροφή*, nutrition.)

The skin and its appendages, in common with other organs of the body, may suffer from atrophy, either idiopathic or symptomatic in character, and general or partial in extent. It may result from either quantitative or qualitative retrogressive changes, losing thus its normal dimensions, either from wasting of one or of all its normal elements, or from degenerative changes in the latter, or from their complete and final disappearance. These changes may be simultaneous. They are usually effected slowly, and the results are persistent. They are frequent concomitants of a long list of other pathological alterations; usually, however, the atrophy succeeds other morbid changes.

ATROPHIA SENILIS.

This is the frequently recognized cutaneous degeneration peculiar to old age. The skin becomes colored in various shades of brown, either uniformly or in tolerably distinct maculations over the face, the dorsum of the hands, the genitalia and the anus, and the lower extremities.

The skin is seamed with furrows and wrinkles, is very dry, may desquamate slightly, and, losing the cushion of fat upon which it rested in earlier life, is either readily raised from the subcutaneous structures or depends from them in loose folds. The hairs on the affected areas may fall or may undergo regressive changes to the lanugo-type. Pea- to finger-nail-sized verruciform, dirty-yellowish accumulations of epidermis become visible, often in numbers on the face and elsewhere, or there may be small pendulous shrivelled pouches representing fibromata that have disappeared. These epithelial growths, especially when irritated, are not infrequently the beginning of malignant epithelioma.

In quantitative senile atrophy the pathological changes include a general thinning of both corium and epidermis, as a result of which their characteristic interdigitations largely disappear; an increased pigmentation in the rete; a shortening of the hair-follicles; a dilatation of the sebaceous and coil-glands, the mouths of which often become blocked with epithelial detritus; the obliteration of some vessels and the dilatation of others; and the disappearance of the fat-cells from the meshes of the connective tissue.

In degenerative atrophy there may be fatty, amyloid, vitreous, and other changes of one or of several elements of the skin. Neumann described a senile atrophy with a granular degeneration and a vitreous swelling of the connective-tissue fibres. Schmidt, Reizenstein, and

Unna think these changes due to a peculiar arrangement of the elastic fibres and their partial degeneration into ELACIN, or, in combination with the collagen, into COLLASTIN and COLLASCIN (Unna). These changes in the elastic fibres are manifested through the peculiar staining qualities of the latter, and in the light of modern technique are exceedingly interesting, as they occur not only in atrophy, but also in other cutaneous disorders.

Senile atrophy cannot be remedied, but it may often be prevented or postponed by securing for the skin and for all the tissues of the body the best possible nutrition and hygiene, and by protecting the skin from exposure to cold and other harmful influences. The nutrition of the skin may often be improved by the proper use of bran- or salt-baths, massage, electricity, or inunctions of oil. Cod-liver oil or other fats may usually be added to the diet with advantage. Care must be taken to protect all warty and other epithelial growths from irritation, with a view to the prevention of malignant changes.

ATROPHIA MACULOSA ET STRIATA.

(*Fr.*, VERGETURES.)

These forms of cutaneous atrophy may conveniently be divided into the so-called idiopathic and the symptomatic.

Partial Idiopathic Atrophy of the skin occurs most frequently in linear cicatriform striæ or streaks (a centimetre or more in length) developed chiefly about the hips, buttocks, and upper portion of the thighs in persons of both sexes of adult years. Less frequently these striæ are observed upon the neck, the trunk, and the extremities. They are insidious of development, indelibly persistent, and appear as sensibly thinned, glistening, and often depressed lines or furrows, having a whitish hue, with an occasional blending of a very delicate purplish tint. They are usually multiple, and at times abundantly displayed, running in various curves, for the most part at angles with the long axis of the body. They occasion, as a rule, no subjective sensation.

Much more rarely the atrophic areas occur in macular patches. The lesions are then fewer, more isolated, and are discovered more frequently upon the extremities, but also upon the trunk, varying in size from that of a coffee-bean to that of a chestnut. This form of atrophy often succeeds either an erythematous or a pigmented condition, which very slowly changes until there is formed a dead-white, round or oval, often insensitive patch, more or less depressed, resembling coarsely a vaccine cicatrix. These areas usually show partial or complete alopecia.

Féré and Quémone¹ have described two singular cases of the disease observed in Charcot's clinic. In one of these cases appeared minute, whitish, elongated cicatrices, about which there was a marked pigmentation of the skin. They were abundant in the lumbar region. In a second case brownish lines appeared over the breast of an unmarried woman, that gradually grew paler while others appeared over the skin

¹ *Le Progrès méd.*, Oct. 29, 1881, p. 837.

of the throat. Those lines which were recent had a brownish or a bluish-red color; others were of a dead-white hue; some appeared over the lumbar region and the upper part of the buttocks; but there was none over the belly, the groins, or the thighs. In both cases the regions attacked were those in which there was no suspicion that the *vergetures* resulted from overdistention of the skin.

These lesions are to be distinguished from sequels of scleroderma, syphilis, and other diseases capable of leaving atrophic areas. A previous history of such pathological conditions would usually be obtainable. In the cases in which there is precedent telangiectasis, hyperæmia, or marked pigmentation of the spot, the diagnosis, as several authors suggest, is attended with some difficulty.

Diffuse Idiopathic Atrophy of the skin (GENERAL IDIOPATHIC CUTANEOUS ATROPHY, ATROPHIA CUTIS UNIVERSALIS, PROGRESSIVE IDIOPATHIC ATROPHY) is usually of progressive type. In these cases the integument over large areas, such as that covering an entire limb or the trunk, becomes thin, flaccid, dry, scaly, unprovided with fat, and brownish or dead whitish in hue. Puncta, striæ, and plaques, reddish blue or reddish brown or even purplish in color, are to be seen marbling the surface and occasionally leaving after disappearance a decided pigmentation. The process slowly advances over the regions affected.

Bronson has recorded a very unusual and interesting case of this form of atrophy, with reference to the principal cases so far reported.¹ Elliott² and Fordyce³ have reported each a case of symmetrical and extensive atrophy, in which the progressing change was preceded by the occurrence of a zone of capillary dilatation or cyanosis.

Partial Symptomatic Atrophy of the skin in its simplest form may result from traumatism (the persistent marks sometimes left on the skin, for example, by a lash with a whip, insufficient to wound the epidermis but capable of injuring the deeper elastic tissue); or from the slow pressure of tumors (ovarian, uterine, mesenteric, etc.), by which the skin is distended. The well-known results of the stretching of the skin in a first pregnancy conducted to term are linear atrophies, at first of a violet tint, and later of a dead-whitish hue, that are indistinguishable, both clinically and pathologically, from idiopathic lesions of similar aspect. These atrophies are occasionally seen over the belly and thighs of male subjects with a protuberant abdomen. Small atrophic scars result frequently from the mechanical pressure of inflammatory and other infiltrations seen in lupus, syphilis, leprosy, and other diseases. Partial symptomatic atrophy, with degeneration of the cutaneous elements (fatty, lardaceous, waxy, etc.), is a sequel common to a long list of cutaneous affections.

Etiology and Pathology.—The causes of idiopathic atrophy are not known. It is generally considered a trophoneurosis, with possibly malnutrition as a predisposing cause. Elliott's and Fordyce's cases (noted above) would suggest an origin in some circulatory disturbance.

¹ Jour. Cutan. and Gen.-Urin. Dis., January, 1895.

² Ibid., April, 1895.

³ Ibid., May, 1897.

The histological changes are those of simple atrophy of the tissues without degenerative changes.

The causes of the symptomatic atrophies are obvious. Histological examination shows in some cases simple tearing and separation of elements, especially of the elastic fibres; in others an atrophy of the corium and epidermis. Unna describes a pressure-atrophy, in which the elastic tissue is torn or displaced to the margins of the area, and an atrophy due to tension which differs from the preceding in that some small fibres of elastin still are visible together with other fibres that have undergone a degeneration into "elacin," in this respect resembling senile degeneration.

The **Treatment** is prophylactic as in senile atrophy.

GLOSSY SKIN.

(ATROPHODERMIA NEURITICUM.)

The "glossy fingers" described by Sir James Paget,¹ Gull, Mitchell, and others, are tapering, smooth, hairless, unwrinkled, glossy, pink, and ruddy or blotched, as if with permanent chilblains. One or several fingers are affected. The condition is associated with neuralgia or nervous impairment indicated by abnormal sensations, as of heat or intense burning. There is usually, however, a precedent or subsequent neuralgic pain, with incurvation of the nails and at times a heaping up of epidermal masses beneath the free border of the nail. In consequence of retraction of the skin over the distal phalanges the terminal extremity of the digit appears thinned and drawn away from the nail-bed.

The complications of this condition are changes in the sebaceous glands and the coil-glands, loss of hair over the phalanges, excoriations, and in severe cases ulceration.

This disorder may be associated with grave systemic states, such as lepra, or with gout and rheumatism. It is found also in those in whom for any reason the circulation is feeble and there has been exposure of the extremities to severe cold. It has likewise been noted as the result of centric and peripheral changes in the nervous system. In some cases the cause is recognized as a neuritis; in other cases it may more properly be classed with the trophoneuroses of the skin. The relations of this and several symmetrical disorders of the hands and feet to the so-called "perforating ulcer of the foot," "asphyxia" of the extremities, "symmetrical gangrene" of the extremities, and so-called "dying of the fingers," all manifestly trophoneurotic affections (see the chapter on this subject), have not yet satisfactorily been established.

BLANCHING ATROPHY OF THE SKIN.—This peculiar degeneration of the integument is characterized by an unnatural whiteness or pallor of the skin-surface, with considerable tension and tenuity of the epidermis, usually limited to the extremities (the arms and palmar faces and the thighs and legs and plantar faces); moderate exfoliation occurs, and the latter, in connection with the tension to which the skin is

¹ Med. Times and Gazette, March 24, 1864.

subjected, is responsible for more or less painful subjective sensations. The disorder is chronic in its course, and it may originate in infancy.

This condition is occasionally illustrated by persons affected with a sensori-motor paralysis of one limb, when the muscles waste and the fat-cells persist, multiply, or wholly disappear. The skin of such limbs, wholly or in patches, becomes unnaturally soft and delicate, and undergoes a loss of pigment and hairs, at the same time that its bulk actually diminishes. The nails may participate in the process. In other cases of trophic disturbance the skin shrivels and assumes, instead of a whitish, a yellowish or yellowish-gray tinge.

MULTIPLE BENIGN TUMOR-LIKE NEW-GROWTHS OF THE SKIN.

Under this title Schweninger and Buzzi¹ describe and figure lesions occurring chiefly on the back, but also on the arms and the chin of a married woman, twenty-nine years of age. These lesions were bean-to coin-sized, bluish-white and slate-tinted formations, with delicate telangiectases over the surface of some. By pressure most of them could be forced into a shallow pit in the underlying tissue, the tumor returning like a ventral hernia after removal of the pressure. The larger seemed to spring from the smaller lesions, and as they increased in age became flatter, less white, harder, and less compressible. They produced no subjective sensations and in no way interfered with the general health of the patient. The vigorous treatment adopted seemed to have but little effect on the growths.

Under the microscope sections of the excised skin showed that elastic fibres were in every instance wholly wanting in the affected portions, nor were there signs of remnants or of degeneration-products of these elements. It was assumed that there had been in each locality a retraction of the elastic tissue, and that the resulting disease was due to a disturbance of the static balance, the overgrowth developing until the equilibrium was established. A growth of new and young cells was visible about the adventitia of the vessels and most of the accessory organs of the skin.

KRAUROSIS VULVÆ.

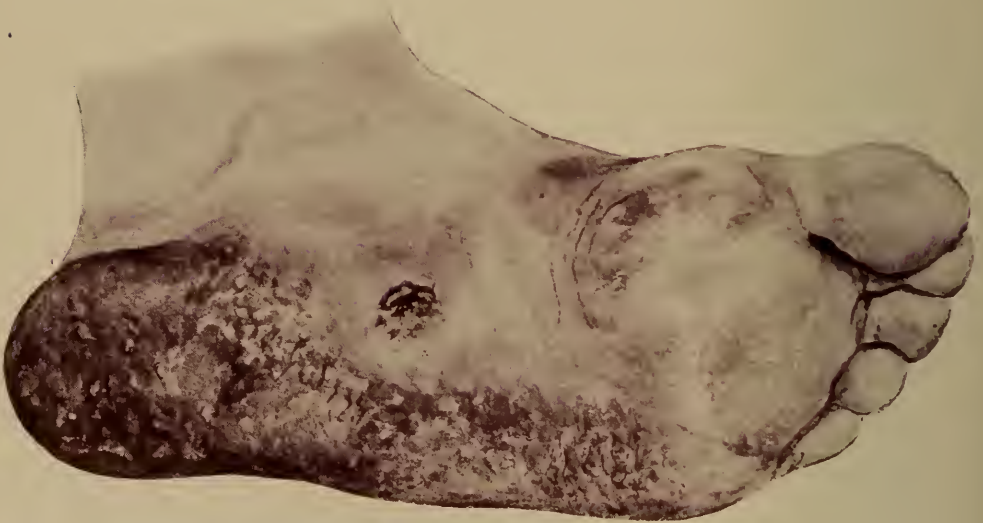
Breisky,² in Austria, and Heitzmann and others³ in America, have described a condition of the vulva in women, affecting particularly the labia minora, the preputium clitoridis, and the vestibulum, in which there occurs a peculiar shrinking, shrivelling, or atrophic change. The labia minora in some cases wholly disappear, shallow furrows taking their place. The clitoris becomes hidden from view and may be represented by a minute depression in the membrane. The integument covering this thinned or atrophied tissue is whitish, thickened, roughened, and dry, while the surrounding parts are glossy, reddish-gray or pallid in hue. In many cases the atrophic changes are preceded by

¹ Internat. Atlas of Rare Skin-diseases, 1890-1891, v.

² Zeitschrift f. Heilkunde, Prag u. Leipzig, March, 1895.

³ Cf. Baldy and Williams, Amer. Jour. Med. Sci., 1899, p. 528, with a review of the literature.

PLATE XIV.



Malum Perforans Pedis, with Symmetrical Keratoma
of the Palms and Soles.

(From a water-color sketch of one of the author's patients.)

a period of congestion and intense pruritus, burning, or hyperæsthesia. These subjective sensations usually disappear in the later stages of the disease. Women of all ages, from nineteen to fifty, suffer from the disorder, irrespective of coitus and pregnancy.

The study of well-marked instances of this disorder indicates that for the present further investigation must be made before the identity of the disease can be accepted or its nosological position be established. The life-history of some of the affected patients must be had in order to gain a complete knowledge of the morbid condition. In one patient the resemblance was very striking to certain indolent epitheliomata of the penis, where a remarkable shrinking may at times be produced in consequence of metamorphosis of tissue.

PERFORATING ULCER OF THE FOOT.

(MALUM PERFORANS PEDIS. *Fr.*, MAL PERFORANT DU PIED.)

This disorder, first named by Vesigné has been studied by Savory and Butlin,¹ Gasquel,² and others. The name is an unfortunate one, since many cases to be classed only in this category have neither ulcerative nor perforating symptoms.

Symptoms.—The first symptom is a proliferating thickening of the epidermis like a corn, usually single, occasionally multiple, appearing over a point of pressure (first or fifth metatarso-phalangeal joint, etc.). Inflammation and suppuration proceed beneath this thickening, spreading first to the soft parts of the sole and perhaps to the bone itself. Gradually a sinus forms, reaching from the side of the corn to the deeper parts involved. Meantime the skin in the neighborhood becomes greatly thickened, heaping itself especially about the sinus. The latter is sometimes surrounded by a mass of granulations. The ulcer which eventually forms is circular in outline, deep, and at times very destructive in its effects.

Thus far the lesion might be supposed to be the result merely of a greatly irritated corn, but other phenomena exhibited in differing cases are quite inexplicable in this way. The nails are altered; superfluous hair grows on the dorsal surface of the foot and the skin of the involved extremity; pigmentation, erythema, or eczema may occur; and the parts may become affected with either anidrosis or hyperidrosis. The disease has been noted as the result of spinal injury, congelation, posterior spinal sclerosis, anæsthetic leprosy, alcoholic and diabetic neuritis, and, in animals, after section of the sciatic nerve, the etiological element in these diseases being degeneration of the nerve (except of the motor nerve) which supply the part. Among the concomitant symptoms ascribed to the same causes are anæsthesia, neuralgic and rheumatic pains, hyperidrosis, and coldness of the feet.

In a group of cases of perforating ulcer of the foot there is generally a symmetrical involvement of the entire sole or palm, either of both feet or of both hands and feet. The patients are often young adults. The palms when involved never exhibit the translucent,

¹ Medico-Chirurgical Transactions, 1879, vol. lx.

² Thèse de Paris, July, 1890; a résumé of ninety-one collected cases.

yellowish, wash-leather-like appearance of the same condition of the soles, but rather suggest the dry, scaly features of the palms in certain forms of erythematous eczema of these parts, but always without itching, and with coincident plantar tylosis. The soles, however, present the typical appearance of callositas throughout the entire region, the callosity reaching somewhat upward over the heel, and in certain patients relatively sparing the instep. In some cases the nails are not involved. The feet are always as cold to the touch as in *pernio*.

Pathology.—The disease is, without question, a trophoneurosis, and may be due to injury to a nerve-centre, as in *tabes dorsalis*; to a nerve-trunk, as in syphilis or leprosy; or to the terminal nerve. Of ninety-one cases collected by Gasquet,¹ there were in sixty-nine central and in eight peripheral nerve-lesions. Histological examination has shown destruction of the myelin and axis-cylinder of twigs of nerves supplying the affected parts. According to Savory and Butlin, the sensory and nutrient fibrils of the involved nerves degenerate in consequence of pressure exercised upon them, by increase of the endoneurium, the motor fibrils escaping owing to their large size and thicker medullary sheath, a view untenable for all cases.

Diagnosis.—The diagnosis is between tuberculosis and simple callositas, a distinction readily established by the evident neurotic phenomena seen in perforating disease of the foot.

Treatment.—By curetting away all diseased tissue and putting the foot completely at rest the ulcer may be made to heal, but it usually reappears when the patient again tries to walk. Amputation of the toe and joint affected avails little. It is not unusual even after amputation of the foot for the disease to appear in the stump. A roborant treatment and mechanical devices to prevent the use of the foot are to be advised in most cases.

The **Prognosis** is doubtful.

MORVAN'S DISEASE.

(SYRINGOMYELIA, ANALGESIC PARALYSIS WITH WHITLOW.
Fr., PANARIS ANALGÉSIQUE.)

Morvan's disease is a paretic affection chiefly involving the upper extremities, accompanied by pain and producing a series of whitlows, affecting first one side of the body and then the other.

Symptoms.—In this disorder the arm is commonly first involved, the approach of the disease being insidious and usually first noticed on account of the production of pain and some loss of nervous and muscular power. At times the first sign of involvement is the production of whitlows, which either early or late in every case are tolerably sure to appear. In other instances the disease first displays an analgesia similar to that occurring in some subjects of *lepra*, the attempt having been made to establish a relation between the two diseases. In time atrophy of the interosseous muscles, of the flexors of the wrist, and of the tissues forming the thenar and hypothenar eminences may result. The integument of the affected limb has a bluish or empurpled look;

¹ Loc. cit.

it may be thinned or thickened, and the seat of fissures, vesicles, and bullæ, as well as of the characteristic whitlows, which vary in number from two to four or six. Ulceration, extending as deeply as to the tendinous sheaths, may result, and, as a consequence of one or more of the changes described above, the phalanges may necrose and be separated from the hand.

Trophic changes arise in connection with the disease, pointing for the most part to an origin in disturbances of the centric nervous system. Among these disturbances may be named: hyperidrosis; diminution of, variability in, or complete absence of the reflexes; visual changes; contracture of the fingers; and a general distortion of the hand. Scoliosis and arthritic complications have been recorded in a number of cases.

The disease is usually protracted in its course, lasting in some cases for a quarter of a century.

Etiology.—The affection may first develop in childhood and last until middle life and longer, though more often it is first noticed after the occurrence of puberty. Women are much less often affected than men. Traumatism, malaria, and rheumatism have all been cited as possible causes of the disease. Its exact etiology is obscure.

Pathology.—Neuritis and thickening of the neurilemma have been discovered in the nerves distributed to the affected parts; as also sclerosis of the posterior cornua and columns of the cord. The cavities recognized in the central canal, distended with fluid, are supposed to be due to absorption of gliomata.

Diagnosis.—The recognition of a fully developed case of Morvan's disease is readily established by taking into consideration the paretic symptoms present, the whitlows, and the perversions of sensation, more particularly in appreciation of temperature-changes, pain, and contact with foreign bodies. Attention has already been directed to the striking resemblance between certain phenomena of anæsthetic lepra and those of both syringomyelia and Morvan's disease. With respect to the diagnostic difference between the two last-named affections, it is claimed that in most cases of syringomyelia the sense of touch remains unimpaired. The time, however, is probably not distant when the two will be recognized as slightly differing manifestations of the same morbid state. Scleroderma and glossy fingers are to be differentiated by the special peculiarities of each.

Treatment is to be conducted on the general principles, surgical and medical, relied upon for meeting the indications of each case. In general the hygienic and dietetic management of the patient with a highly roborant regimen is conducive to recovery. Many of the subjects of the disease have been reported as relieved or even wholly cured.

AINHUM.

(From a native term, meaning "to saw.")

This disease was first described by Clark¹ and later by J. F. Da Silva Lima,² of Bahia, in Brazil, who collected a large number of cases. In a paper presented by him, which was read by one of us before

¹ Transactions Epiderm. Soc., 1860.

² Arch. of Derm., 1880, p. 367.

the American Dermatological Association, in 1880, the disease was described as affecting usually the little toe of negroes of Africa and Brazil. An indurated ring encircled the root of the digit, which produced, finally, a deep, narrow circular depression, the latter deepening till the toe was strangulated, and finally, in the course of from five to ten years, completely detached. Meantime the volume of the digit was greatly increased by development of fatty tissue at the expense of the tendons, vascular elements, bones, and cartilages. This paper was accompanied by the presentation of a toe affected with *ainhum*; and the specimen was referred to a committee, which after examination reported with a full description of the anatomical appearance of the specimen, that the constricting ring was probably produced artificially by tying a thin ligature around the toe, which, if not continuously encircling it, was worn at least for long periods of time.

Duhring also has published the report of a case of *ainhum* in which microscopical examination was made by Wilde of a toe that was cast off from the foot of a negro in West Virginia. The pathologist came to the conclusion in this case also that the disease was essentially an inflammatory œdema produced by ligating the toe.

Though the disease has since been studied by many competent observers its exact nature is still undetermined. Considering the fact that among superstitious races, especially the blacks, the most singular practices of self-mutilation are observed, it is possible that in some of these cases the toe is constricted by a ligature intentionally applied around it. That many of these cases occur independently of such intentional mutilation there can be no doubt when the observations of other competent observers are considered. Zambacho Pacha¹ discusses at length the possible relation of the disease to leprosy.

The probable relation of the disease to other trophoneuroses is well illustrated by a child presented at our clinic, a deaf mute who was an inmate of one of the public institutions founded for the care of that class of sufferers. The patient was twelve years of age, fairly well nourished, and the subject of a symmetrical palmar and plantar keratosis. The little finger of each hand in the middle of the proximal phalanx was closely encircled by a tensely drawn cicatriform linear girdle, the constriction of which was rapidly working an amputation of the little finger of the left hand, the right being less seriously involved, and some other fingers incompletely girdled by constrictions existing only on the palmar faces. Here the demonstration of the cause of the amputation was clearly made, for the callous ring about the digits was manifestly in line with the equally dense callosities of the palms and soles, which differed from the former chiefly because of their occurrence in broad plates rather than in narrow lines. A patient presenting the same features was exhibited before the Fourth International Congress of Dermatology, held in Paris in 1900.

Ainhum is seen chiefly in the natives of Africa, Brazil, West Indies, and India, a few cases having been reported from the southern states of this country. Herrick² recently reported a case in a negro

¹ Transactions Internat. Leprosy Conference, 1897, vol. iii., p. 45.

² Phila. Med. Jour., Feb. 5, 1898.

who had lived for thirty years in Illinois. It is a disease of adults, though it has been reported in a few instances in children. Only four times is it recorded as occurring in the white race. The little toe is the one usually affected, but the disease may involve the other toes, or rarely the fingers. The sensibility of the toe is not lost, but there is no pain unless ulceration occur at the bottom of the groove.

The causes of the disease, which is probably a trophoneurosis, are not known, and its pathology is undetermined. There is marked atrophy of bone, the amputation occurring commonly through the osseous diaphysis instead of the joint. There is marked hypertrophy of the epidermis and of the papillary body. The vessels are enlarged and thickened, but their calibre is diminished.

Incision of the constricting ring at an early period is said to relieve the disease. In most of the cases amputation is required or is effected by the natural progress of the disorder.

CLASS VI.

NEW-GROWTHS.

KELOID.

(Gr. *χηλῆ*, a crab's claw.)

(CHELOID, KELIS. *Fr.*, CANCROÏDE; *Ger.*, KNOLLENKREBS, ALIBERT'S KELOID.)

THE term keloid, first given to the disease by Alibert, should be restricted to it exclusively. The so-called "keloid" of Addison is known to-day more properly as scleroderma.

Authors have described two varieties of this disease: the "true," "spontaneous," or idiopathic form; and the "false," "spurious," or cicatricial form, which develops in the scar produced by a previous traumatism.

There is no anatomico-pathological separation between the two, and it is highly probable that all cases of so-called "spontaneous keloid" are instances of development of the growth in regions of pressure, contusion, traction, or slight traumatisms that have not been recognized, such as the wounds inflicted by mosquitoes.

Symptoms.—The new-formations of this disease are dense, generally elastic nodules imbedded in the corium, or projecting above the level of the skin and firmly attached to it. They are usually very slow of evolution, and, having once attained full development and assumed one of the several shapes which they affect, usually persist for a lifetime. These forms are whitish or reddish, globular or semi-globular nodules, buttons, or plaques, with roundish or ovoid outline; linear elevated striæ, bands, ridges, resembling cords, ribbons, or tapes, in irregular outline and disposition; or combinations of two or more of these figures. A common form over the sternum and in other situations where the development of the growth in every direction is not impeded, is that of a larger central mass with two or more diminishing and declining prolongations bearing a remote resemblance to the body and claws of a crab. The lesions vary in size from that of a small pea to that of a large saucer, the largest including the outlying points of the limbs or radiating ridges. Over them the skin is reddish or whitish in color, smooth, hairless, and occasionally hypersensitive to pressure and heat. Often small blood-vessels traverse its surface. The growth at times is also the seat of spontaneous pain.

The most frequent site of the disease is the anterior surface of the chest, but it is observed also upon the face, neck, ears, breast, hands,

between the scapulæ, and on the extremities (Fig. 63). Keloid is also seen upon the penis of the negro. It is far more common in the colored than in the white races. Though frequently multiple, there are rarely more than a score of these growths visible at one time upon the skin of one person.

The overlying integument at times may wholly be uncolored in the white races, and dead whitish in color or even blackish among negroes. At other times the surface is not merely pinkish or reddish, but is vividly red in hue. The color is produced by vascular connective tissue covering the growth. The subjective sensations

FIG. 63.



Keloid.

aroused are commonly trifling or inappreciable; at other times the growths are the seat of severe pain or of burning. The usual course of the disease is toward the production of tumors of a medium size, after which few changes are to be recognized. Involution and complete disappearance are rare. These results, however, have been secured in a few cases.

CICATRICAL KELOID (SCAR-KELOID, HYPERTROPHIC SCAR, HYPERTROPHIC CICATRIX) resembles in its features the true keloid described above, and differs from it chiefly in the fact that the cicatricial form is ordinarily preceded by scar-formation, due either to disease or to injury. It thus follows the lesions of zoster, variola, and syphilis, as also traumatisms of all sorts, including those made by surgical operations and

accidents. The tumors, as a rule, spring directly from scar-tissue, and after reaching a maximum of development do not surpass the limits of the original lesions; at times, however, the growths slowly develop, as in spontaneous keloid, at a distance from the original site of injury or disease. Scar-keloid is often found as a firm nodule in the lobe of each ear among women, after piercing the ears for the insertion of earrings; it is seen also not rarely as a result of burns, whether produced by application of caustic agents or of heat.

Etiology.—The origin of the disease is exceedingly obscure. Neither age, sex, nor previous disorder of the skin seems to have any bearing upon its production. It is seen in remarkably vigorous persons (more often in the negro race), but also in those who are weakly. The very young and very old are more rarely affected.

Though not yet demonstrated, it is probable that eventually some varieties of keloid will be recognized as examples of cutaneous paratuberculosis, the predisposition to the development of the disease in sites of slight traumatism being related to the toxins furnished from a distant focus. The race in which its lesions are most often and most voluminously displayed is exceedingly prone to tuberculous infection; and the frequent recurrence of the disease after surgical excision and the peculiar lupoid aspect of certain keloid lesions are strikingly suggestive.

Pathology.—According to Langerhans, Warren, Kaposi, and others, in all cases of true keloid the papillary layer of the corium and the interpapillary projections of the rete downward are intact, the new formation being strictly limited to the middle and lower portions of the corium, in which there are numerous whitish, tendinous fibres of connective tissue, dispersed for the most part parallel with the surface of the rete. In cicatricial keloid these observers find a partial or complete absence of the papillæ and interpapillary processes. Babes, Crocker, and others, on the contrary, find that the papillæ and rete may be normal, modified, or absent in either form. Lymph-vessels with proliferated endothelium, compressed by longitudinal growth of the fibres, pass in both vertical and horizontal planes, for the most part remaining patulous. There are few spindle-cells and nucleated cells. Blood-vessels are few in the centre of the tumor, but are numerous at the border and in the loose connective tissue surrounding the growth. For some distance beyond the tumor the adventitia of the vessel shows a small-cell-growth which probably develops later into spindle-cells and fibres. These, with the included tissue of the corium, form the keloid. The sebaceous glands and coil-glands, hair-follicles, and muscles are pushed to one side by the new growth and often are atrophied.

Diagnosis.—The clinical distinction between keloid and cicatricial keloid is of trifling importance. The situations of the lesions of keloid, often over the sternum, the infrequency of multiple tumors, its claw-like prolongations, and yellowish-white, reddish, or grayish-white color, all point to the nature of the disease.

Treatment.—Removal of keloid by cauterization and excision is not to be practised, as the growth commonly does not fail to reappear. Vidal successfully employed multiple linear scarifications. Various

stimulating applications may also be made with a view to promote resorption, such as the spirit of green soap, iodated glycerin, iodine in ointment and tincture, and mercurial, salicylated, and lead plasters. The employment of these remedies is subject to the danger of stimulating the growth to greater activity. Where there is pain anodyne unguents may be employed topically, such as freshly prepared belladonna plaster, or ointments of belladonna, stramonium, and opium. By far the most elegant of these, and the one which also is capable of producing an alterative effect, is the oleate of mercury and morphine. Laurence¹ obtained good results by scarification followed for several weeks by moderate pressure, produced with adhesive plaster. Ularic and others report successful destruction of keloid with injections of 5 to 20 per cent. solutions of creosote in olive oil. Electrolysis has given good results in a few cases.

Internally, quinine, strychnine, arsenic, and potassium iodide have been exhibited with varying success.

Prognosis.—As regards the general condition of the patient the prognosis is favorable. Very rarely there is spontaneous resorption of the nodule or tumor. Generally the latter may be expected to persist, after full evolution is attained, for an indefinite period of time.

CICATRIX.

A cicatrix is a new-formation of the skin, replacing connective tissue which has been lost by traumatism, by ulceration, or by some other pathological process. Most cicatrices, as, for example, those following the ulcerations of syphilis, the operations of the surgeon, or the dermatitis produced by a severe burn, are reparative in character.

They vary greatly in shape, size, color, and other features. They may be smooth, glossy, shining, scaling, dull whitish in color, or pinkish from vascularization of the surface. They may be linear, fan-shaped, circular, corded, ridged, dotted, crateriform, or tumor-like. They may be raised above the skin, on a level with it, or depressed below it. They may be deeply attached to periosteum or to bone, or readily be movable over the panniculus adiposus. They are of deeper color when young, and increase in whiteness with age. They are unprovided, as a rule, with hairs, or with coil- or sebaceous glands.

The most insignificant cicatrices are those resulting from clean, incised, and punctured wounds and lesions of similar grade. Certain peculiarities of cicatrices are seen in special disorders in which they are produced. Circular, oval, reniform, horseshoe-shaped, S-shaped, and figure-of-eight-shaped scars, thin and flexible, are characteristic of syphilis. The cicatrices of variola, zona, and ecthyma are slightly different each from the other, though all are of small size and depressed. Those of tuberculosis and dermatitis calorica of severe grade are exceedingly irregular and often corded.

Hypertrophy of cicatrices is the condition already described as keloid. Here there is a tumor-like development of the cicatrix, forming a ridge, button, knob, indurated fold, or puckered and irregularly

¹ Brit. Med. Jour., July 16, 1898.

circumscribed, whitish or reddish lesions. In certain individuals these lesions may follow almost every traumatism and destructive process to which the integument is liable.

A case of cicatrix undergoing involution has been described by Dyce Duckworth, in a man (aged fifty) who suffered from rheumatic fever on two occasions, ten years before the date of report. This patient had pericarditis, and was blistered over the precordia. Nine months afterward lines of cicatricial growth began to form in the scar left by the blister, and they rapidly extended; in two years' time they were still enlarging; in seven years some subsidence was noticed, and, when exhibited ten years after their first formation, involution was markedly progressing. This case illustrates the frequent origin of scar-tissue, its common occurrence over the sternum, and the fact of the subsidence of the new-growth in the course of time.¹

Keloid-like cicatrix of the cheeks following acne is far from uncommon. Its lesion is usually smoothed down in the process of time, after the disappearance of the sebaceous gland-disorder, until the deformity is greatly lessened, and often scarcely noticeable.

Etiology.—The formation of cicatrix is always preceded by destruction of at least a portion of the papillary body of the corium. This loss of tissue may be due to various causes: trauma, burns, ulcers, atrophy caused by pressure of new-growths, etc. Hypertrophied cicatrix may result from slight but continued or frequently repeated irritation of a healing surface, the repair of which is thus greatly delayed, but it occurs chiefly in the form of cicatricial keloid.

Pathology.—Histologically, scars are made up of connective-tissue bundles which interlace in all directions with great irregularity. In young scars the fibres are finer and the tissue is vascular, but as the scar grows older the fibres usually become coarser and contract and the vessels disappear. There is complete absence of hair-follicles, glands, and furrows of normal skin. The scar-tissue proper is covered with a very thin epidermis, and Heitzmann claims that shallow and irregular papillæ are always present. Other observers report in scars an entire absence of both papillæ and rete-pegs.

Diagnosis.—The distinction between hypertrophied cicatrix and keloid is one chiefly of degree and needless from a practical point of view. Following the piercing of the lobule of the ear for the insertion of earrings, the lesion is distinguishable by pinching the part between the fingers, when a globular-, pea- to cherry-sized mass will be felt firmly imbedded in the derma between the reflected folds of the integument. Upon the face, after the occurrence of acne, keloid can be usually seen as a puckered ridge, often transverse in direction, occupying the region of the cheek.

Treatment.—The resources of modern surgery are to be trusted in the production of laudable cicatrices when all antiseptic precautions are observed. The treatment of pathological conditions likely to be followed by cicatrices is the treatment largely of the special disease in which such loss of tissue occurs, *e. g.*, the ulcer left by a degenerating syphilitic gumma of the skin. An irregular or disfiguring cicatrix

¹ Brit. Med. Jour., October 8, 1881, p. 597.

may be excised if there be sufficient tissue to permit direct union of normal tissue on either side. Skin-grafting may be employed after excision of larger scars.

The treatment of hypertrophied cicatrix depends upon its cause. If due to individual idiosyncrasy, the treatment is that of keloid.

FIBROMA.

(Lat. *fibra*, a fibre.)

(FIBROMA MOLLUSCUM, MOLLUSCUM PENDULUM.)

Symptoms.—Fibroma is a disease characterized usually by the occurrence of numerous, roundish, softish, semisolid or solid growths, varying in size from that of a small pea to tumors of several pounds weight, though more rarely the neoplasm is single. They are often called molluscous fibromata, as the disease was termed at one time molluscum fibrosum. When quite small they are seated within or beneath the skin, where they can be distinguished as distinctly circumscribed nodules, buttons, or plaques often slightly projecting. When more fully developed they become sessile, pedunculated, or largely pendulous tumors, hanging from the part to which they are attached so as to resemble in shape a cherry, a nipple, a pear, or a sausage. They are commonly covered with an integument that is natural in color and suppleness, though the latter may be traversed by blood-vessels; sprinkled with comedones or patent orifices of sebaceous gland-ducts; thinned or thickened, or in a state of ulceration; the last named being usually the result of externally operating causes in tumors of large size. They are productive of no subjective sensation beyond the more or less uncomfortable tension produced by the weight of those attaining a great size. When multiple they may be seen in various degrees of development, covering in hundreds and even thousands the entire body, especially the scalp, face, trunk, genitals, and extremities. Upon the lids they may interfere with vision by the production of ptosis. To the touch they may be felt as softish, somewhat elastic, firm, or lobulated masses, though at times nothing but a double fold of skin can be perceived, or a cord-like contained body. They are often congenital. When closely set together upon the skin, and of small size and pendulous, the features of the disease are characteristic.

Schwimmer distinguishes between these lesions usually congenital (termed by him, soft fibroma), and the dense tumors of similar anatomical features (termed by him, firm, or hard, fibroma). The latter are circumscribed, deeply seated, very slow of development, and apt to induce changes in the tissue which surrounds them. They may undergo fatty degeneration, or ossification, or calcification.

The first appearance of the disease may sometimes be recognized as a roundish spot over which the skin is uplifted. It is of a light-pinkish color. The tumor is soft and suggests to the touch a thinning of the derma beneath. By firm pressure over such lesions when they have attained about a centimetre in diameter they may be slowly pushed downward into the skin, and the sensation is produced to

PLATE XV.



Multiple Fibroma of the Back.

the touch of a foramen in the derma. Fusion between the new-growth and the skin over it is of early occurrence. The spherical or oval form of the tumor depends upon the direction of the bundles of the subcutaneous tissue of the part invaded. The tumors may undergo involution, but this result is more common when the patient is under thirty years of age. Dermatolysis is produced by great activity of the growth of one, or fusion of several tumors, by which a flap of skin is formed.

Some of the tumors, usually in young subjects, suggest, when handled, that they contain boiled vermicelli or a number of thread-worms. The soft and gelatinous quality of the neoplasm in earlier life is believed to be proportioned to the age of the subject, and a rapid development and succulency of structure are only conditions of imperfect evolution, and are not common in older patients, in whom the tumors are firmer and grow more slowly.

When involution occurs after maturity of the lesions has been attained the softish contents of the tumors are adherent to the cutis above, and the cutaneous atrophy is proportioned to the rapidity of development of the growth and the firmness of its structure. Then ensues a purse-like pedunculation of the tumor, produced by encroachment of the skin upon its pedicle, rendering its invagination, supposable before, afterward difficult or impossible. Gradually thereafter the neoplasm loses its skin-connection. Eventually in many cases only fibrous cords are left, evidently attached to the connective tissue beneath, the skin-color paling as the vascular tension correspondingly diminishes. Soon the dermal foramen closes, and the involutive process is at an end. Then empty and wrinkled pouches or purses of integument are left, the further shrinkage of which produces multiple warty or nipple-like elevations of tissue (under the microscope recognized as fibrous structures with an epithelial envelope), much in color like the virgin nipple or the scrotum of a boy. From four months to a year are requisite for the mature development of the tumors, and nearly as long a period for the completion of the process of involution. The

FIG. 64.



Multiple fibromata. (GROSS.)

dermatolytic flap is permanent. Taylor believes that there is the closest possible relation between fibroma and the verrucous growths called acrochordon and ecphyma mollusciforme.

DERMATOLYSIS (**CHALAZODERMIA**, **PACHYDERMATOCELE**, **FIBROMA PENDULUM**, **LAX OR RELAXED SKIN**) is a condition which, as appears in what precedes, may be produced by fibroma and follow the involution of its lesions. In other cases it is apparently spontaneous and diffuse, but then it is probably the result of some preceding condition that has been unnoticed. The skin of patients thus affected is in a condition resembling that of the young of several of the larger among the lower animals (pups of large hounds, etc.), where enormous flaps of skin may be gathered up between the fingers and extended a foot or more from the underlying tissue. On releasing such folds the skin retracts to its former position. The skin in these cases is usually thickened, but it may be stretched to a considerable tenuity, as in the case of a man lately exhibited in America who could cover his face with skin drawn up from the surface of the chest. The integument may be externally normal to the view or pigmented. It may be the seat of molluscous tumors; and either insensitive or normally sensitive, or the seat of painful sensations. Usually all the functions of the integument are preserved.

The anomaly is always partial and limited to either the face (the lids), the neck, the chest, the belly, or the genital region. The disease may be congenital or acquired.

Dermatolysis, as thus recognized, is to be distinguished from the laxity of skin apparent in the senile condition and after distention from the presence of tumors, pregnancy, etc. Usually, however, in the last-named group of cases it is the subcutaneous tissues which are relaxed rather than to any unusual extent the skin itself (*e. g.*, the mammary glands of women of advanced years, and the abdominal muscles after distention of the belly).

Etiology.—Fibroma is peculiar to neither sex; and, though observed in adults, is commonly first developed in childhood. It cannot be claimed as peculiar to any race, though in America negroes have probably furnished the largest field for its observation. Hebra called attention to the low standard of physical and mental development of the subjects of the disease seen by him, a fact well illustrated in a case recently presented, the patient being an exceedingly myopic, poorly nourished white male dwarf, whose body was literally covered with fibromata from the scalp to the feet. In view of this well-established clinical fact, the hereditability of the disease, which is rendered probable by recorded observations, seems capable of explanation. It has been noted in three successive generations and in seven children in one family. The cause of the disease is unknown. It is, however, reasonable to conclude that it is due to a vice of local development under the influence of a constitutional predisposition.

Pathology.—Simple, soft fibroma of the skin is seen under the microscope to be a variety of myxo-fibroma and originates in gelatinous connective-tissue elements, which undergo metamorphosis into bundles

PLATE XVI.



Fibroma Pendulum.



of fibres, the tumors always exhibiting more of the formed fibrous tissue in the outer, and the formative or protoplasmic material in the central parts of the mass. In young tumors the fibres are delicate and form a loose network containing many spindle-shaped cells. As the growth becomes older and harder the fibres become coarser and more closely united, forming compact fibrous tissue in which there are very few cells. The vascular supply of fibromata is usually slight. The fibrous bundles pass downward and unite with those of the derma or subcutaneous tissue, forming thus a firm attachment for the pedicle of all pedunculated tumors. There is some question as to whether these growths originate in the deep interspaces of the corium or in the connective tissue about the hair-follicles or fat-globules.

A very large number of fibromata are of the so-called "mixed" variety. Some spring from the nerve-sheaths, and actually contain nerve-filaments (neuro-fibroma); others from muscular, vascular, and glandular tissues, the compound tumor receiving in this way a part of its constituent elements; often warty growths form with participation of epithelium in the connective tissue, constituting thus an epithelioma (so-called "papilloma"). The large pendulous tumors of *nævus lipomatodes* may be examples of mixed fibromata, the surface of which is composed of pigmented and hairy skin.

Diagnosis.—The tumors of *molluscum fibrosum* are to be distinguished clinically from multiple cutaneous sarcomata by the violaceous or reddish color of the latter, the absence of pedunculation, the greater tendency to ulceration, and their evidently malignant character. From tubercles of *lepra* they are differentiated by the entire absence of constitutional impairment and their general development in far greater multiplicity. The tumors of *molluscum epitheliale* differ in their contents, their superficial location, and in the frequent presence of the dark punctum at their summits.

Neuroma is usually painful; lipoma less frequently multiple and pedunculated, and more suggestive, when handled, of a "pillowy" sensation to the touch. Warty growths are readily distinguished by their verrucous summits; and the gummata of syphilis, by the concomitant or prior symptoms of the existence of lues.

Treatment.—The treatment of large single fibromata is surgical, involving the employment of knife, ligature, *écraseur*, or galvano- or thermo-cauterization. Multiple lesions are often so numerous as to forbid such interference. When there is a distinct vice of development or inherited tendency to the disease little can be accomplished in the way of treatment.

Prognosis.—Rarely, one or more of these lesions disappear by spontaneous involution. More commonly they persist after their evolution is completed. Marasmus, tuberculosis, and a fatal result may occur. One or several of the tumors may become sources of danger from the occurrence in them of an active inflammation with resulting degeneration and septicæmic consequences. The disease, however, does not in many cases shorten life. In general the prognosis of multiple fibromata may be regarded as unfavorable.

NEUROMA.

(Gr. *νεῦρον*, nerve.)

Symptoms.—But few cases of this rare disease are recorded. The description appended is a summary of the symptoms detailed in the reports of Duhring,¹ of Rump,² and of Kosinski.³

The patients were all men of middle life or advanced years, who exhibited upon the shoulders, arms, thighs, or buttocks numerous disseminated and defined, pinhead- to hazel-nut-sized, spherical or oval nodules or tubercles. They were either painful, or painless at the outset and painful later. In Rump's case, which was a sample of the false neuroma of Virchow (fibroid tumor of the nerve), there was no pain throughout the course of the disease.

FIG. 65.



Neuroma of the skin: external appearance. (DUHRING.)

The nodules were not arranged along the tracts of nerves; were immovable, dense, and elastic; were fixed in the corium and extended below it. They were purplish or pinkish in color; and the skin between them was unaltered, or like that enveloping the lesions, dry, uneven, and desquamative. The tubercles were both tender and painful, the pain being excruciating, paroxysmal, usually lasting in Duhring's patient for an hour, and radiating. It was aggravated by temperature-changes, mental emotion, and movement.

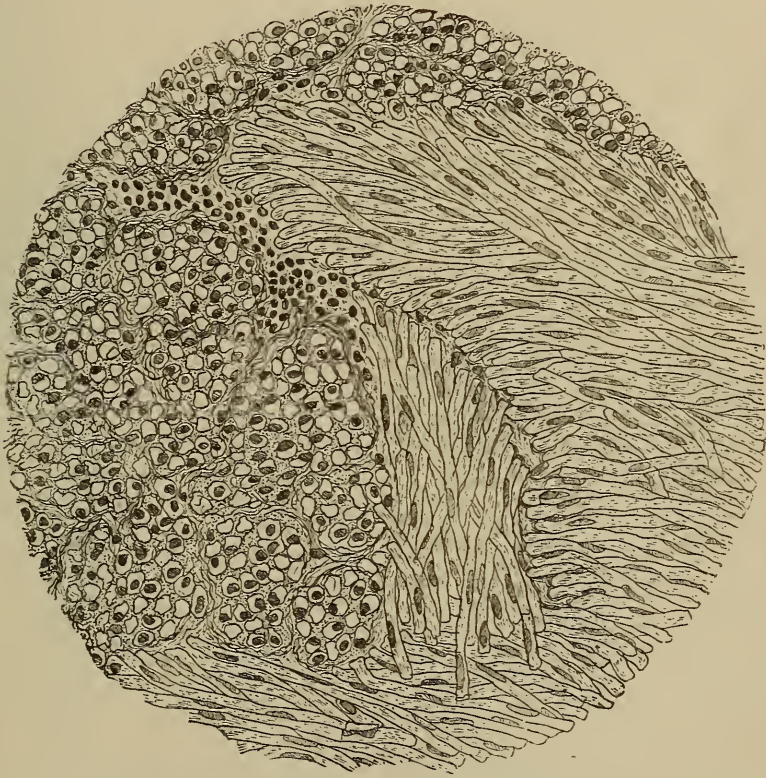
¹ "Case of Painful Neuroma of the Skin," Amer. Jour. Med. Sci., October, 1873; also supplement to the same, with cuts, October, 1881.

² Arch. f. path. Anat. u. Phys., Bd. lxxx., Heft 1.

³ Centralbl. f. Chir., 1874, No. 16.

Histologically these tumors are composed of a mixture of fine connective tissue with medullated and non-medullated nerve-fibres; and should properly be called neuro-fibromata. Sections of the growth in Duhring's case showed anatomically a connective-tissue stroma, interwoven with fibres for the most part lying parallel with one another, each fibre composed of a finely granular central substance surrounded by a sheath containing numerous, elongated, oval, somewhat granular nuclei. There were also yellow elastic tissue, blood-vessels with thickened and nucleated walls, and about the latter lymphoid, cell-like bodies. There was entire absence of unstriated muscular and fibrillar

FIG. 66.



Microscopic structure of neuroma. (DUHRING.)

connective tissue. The specimen represented the true amyelinic neuro-mata of Virchow. In Kosinski's case non-medullated nerve-fibres and connective tissue were also discovered. In both cases exsection of a portion of nerve (brachial plexus, of the one; and small sciatic, of the other) was followed by considerable diminution of pain and almost entire disappearance of the growths. In Rump's case, which, as stated above, represented the fibromated and so-called fibro-nucleated tumors of Virchow, the nodules were strung upon the same nerve, "like beads upon a rosary," and were similarly displayed upon its branches. Spinal, cerebral, and sympathetic fibres were all involved.

Duhring, in commenting upon these rare cases, calls attention to the distinction between purely cutaneous lesions and the generally solitary, movable, and "painful subcutaneous tubercle."

Knauss¹ reports a case in a girl of eleven years. There were over sixty tumors varying in size from a cherry to a hen's egg. They were situated beneath the skin, were firm and elastic, and never painful. Histological examination showed them to be composed of medullated and non-medullated nerve-fibres, and numerous ganglionic nerve-cells.

XANTHOMA.

(Gr. *ξανθός*, yellow.)

(XANTHELASMA, VITILIGOIDEA. *Fr.*, PLAQUES JAUNÂTRES DES PAUPIÈRES.)

This affection was described by Rayer² under the title *Plaques jaunâtres des Paupières*; by Addison and Gull (1851) as *Vitiligoidea*; by Erasmus Wilson as *Xanthelasma*; and by W. F. Smith (1869) as *Xanthoma*, the name now generally accepted by writers.

Symptoms.—Two forms of the disease are commonly recognized: *Xanthoma planum* and *Xanthoma multiplex*.

XANTHOMA PLANUM.—The flat or plane forms of the disease appear as pinhead- to finger-nail-sized plaques, either quite flat or with slightly elevated borders, and covered with an apparently normal integument. In color, which may be rendered more distinct by stretching the skin, they vary from light- or chrome-yellow to a "coffee-and-milk" shade; and in shape they may be punctiform, spherical, oval, elongated, or of irregular outline. They are distinctly circumscribed, and when gathered between the thumb and finger are soft and smooth, and do not produce a sensation of the presence of a foreign material. The plaques, examined closely, are seen to be made up of an aggregation of millet-seed-sized, yellowish nodules, each provided commonly with a somewhat reddish central point. The plaques are most often seen upon the eyelids (*XANTHOMA PALPEBRARUM*), near the inner canthus, where they may be symmetrically disposed about the two orbits, first appearing on one side; but they may invade also the periorbicular region, as also, rarely, the cheeks, the nose, the ears, and the nucha. They are rarely productive of subjective sensation, being occasionally the seat of slight pruritus. This is the commoner form of the disease.

XANTHOMA MULTIPLEX (*XANTHOMA PAPULATUM, TUBERCULATUM, TUBEROSUM*) is the form in which the lesions, usually first manifested in the sites of election and in their simplest development, proceed to a gradual invasion of the trunk and extremities. The regions of greatest pressure, outside of the lids and cheeks, seem sites of preference, as, for example, over the elbows, knees, palms, and buttocks. Occasionally the mucous surfaces of the mouth, of the respiratory and gastro-intestinal tracts are involved, as also the surfaces of the peritoneum, endocardium, and larger arteries. The genital region, palate, œsophagus, spleen, trachea, and cornea have all been recognized as seats of the disease. Papular and tubercular lesions may coexist

¹ Virchow's Arch., 1898, Bd. cliii., S. 29.

² *Traité prat. des Maladies de la Peau.* Paris, 1836.

PLATE XVII.



Xanthoma of the Hands, Elbows, and Knees.

(From a Photograph of one of the author's patients.)

PLATE XVIII.



Xanthoma Tuberosum of the Hands.

(From a painting.)

with the plane lesions described above, and scarcely differ from the latter save in a greater development. The lesions are whitish or yellowish papules, plaques, and tubercles, circumscribed in contour, millet-seed- to nut-sized, and at times much larger, covered with an unaltered epidermis, and determinable by palpation as having greater consistence than the flat macules. They are less frequently seen upon the lids, but occur upon the scalp, cheeks, palmar and plantar surfaces, the genital region, and about the joints of the digits.

In rare cases the tubercles may coalesce to form sessile or pedunculated, nut- to hen's-egg-sized tumors which are firmer as a rule than the smaller lesions (Cary¹ and Chambard²).

The conglomerate forms upon the skin constitute large plaques resembling tumors, compounded of lesions of xanthoma tuberosum. They are distinctly circumscribed, deeply imbedded in the corium, elevated to the extent of one-fourth of an inch above the general level of the integument, and irregularly furrowed or lobulated superficially. An illustration from a photograph of xanthoma occurring in full development and in rare situations is presented in the plate appended.

Other cases display unusual features of this disease. In one there are flattened ribbons, exhibiting xanthomatous changes in both palms, stretching at right-angles to the long axis of the hand; in a second and somewhat rare form of the disease isolated xanthomatous papules are attached somewhat regularly to the edges of the lids of both eyes, the upper and lower equally, while large pinhead-sized and equally isolated yellowish masses are visible below the orbits on each cheek.

In certain cases the disease is accompanied by a generalized coloration of the skin in a yellowish shade, which has been variously interpreted as a xanthomatous dyschromia and as a true icterus. The former is the more probable explanation of the fact, as in such cases the urine and viscera have been found normal. A woman presenting one of the extreme phases of this icteroid xanthomatous condition of the skin was shown at the International Congress of Dermatology in London in 1896.

Korach³ has described the case of a woman twenty-five years old, suffering from chronic icterus produced by closure of the ductus choledochus. Beside the typical patches of xanthoma on the lids, the skin-surface was generally and similarly affected. Thus the extensor faces of the extremities, the palms of the hands, nates, and other parts were extensively covered with sago-grain- to pepper-corn-sized papules and tubercles of xanthoma, both flat and elevated.

Occasionally the tubercles exhibit a fine vascularization; and when there is a coincident jaundice the skin between isolated lesions is also tinted with the color of the xanthoma nodules. The jaundice, so-called, is rather common in the multiplex forms; and even when not readily recognized the skin, at first sight of normal tint, is seen to be somewhat deeply colored in a shade of reddish yellow. As a rule, there are scarcely distinguishable subjective sensations, patients com-

¹ Annal. de Derm. et de Syph., 1880, p. 75.

² Arch. de Phys. norm. et path., Sept. and Dec., 1879.

³ Deutsch. med. Woch., 1881, No. 20.

monly applying for relief of the resulting facial disfigurement. Occasionally burning and pricking, and rarely even painful sensations are produced. The patient whose lesions were selected for illustration of this chapter subsequently had the tumors removed from his limbs in order to relieve himself of discomfort in his work.

The course of most cases is toward a maximum of development, after which the process ceases. In a few instances, usually not palpebral, complete involution has spontaneously occurred. The variations noted in the color of the plane and elevated forms of xanthoma are from a light-yellow to a deep-brownish and even blackish hue. Cases occurring in children and infants seem to exhibit nearly the same features as those seen in adults.

Etiology.—The causes of the disease are obscure. In a few cases the lesions are first observed in early childhood, though they are encountered chiefly in middle and later life. Women are rather more often affected than men.

The belief is growing that xanthoma is due to embryonic and local causes. Many instances are on record in which several members of a family were affected. Török and T. C. Fox have each reported families in which members of three generations presented the disease. The mother of the patient exhibiting multiple lesions upon the elbows and knees, whose case was selected for illustration of these pages, presented plane lesions of xanthoma near the inner canthi of the eyes. The studies of Török¹ in this direction are instructive. The association of xanthoma with disease of the liver, rheumatism, gout, ovarian disease, migraine, syphilis, carcinoma, hydatids, and other disorders cannot be denied for certain cases, but in the majority no such association can be recognized. Multiple plane lesions of the lid in a middle-aged woman have succeeded a dermatitis of that region, induced by accidental contact with a corrosive solution of mercury.

Pathology.—The anatomy of xanthoma has been investigated specially by Chambard, Balzer, Touton,² Török, and others. The process seems to be a connective-tissue new-growth, containing cells infiltrated with fat-granules. Aside from the new-formed connective tissue and endothelial cells there are seen between the interlacing fibres the characteristic “xanthoma-bodies.” These are cells varying greatly in size, having a distinct membrane, granular or fibrillated protoplasm, and large round or oval vesicular nuclei, which vary in number from one to a dozen or more.

These “xanthoma-cells” are grouped especially about and along the vessels, and form globular masses in the deeper parts of the corium, though they may extend almost to the rete. They are more or less infiltrated with fat-granules, and correspond closely in structure to the developing fat-cells of normal connective tissue, but, as Török has shown, they never go on to the formation of a fully developed cell containing one large drop of fat, and Unna finds they do not respond to staining and other tests as do the fat-containing cells found in other

¹ *Annal. de Derm. et de Syph.*, Nov. and Dec., 1893.

² *Vierteljahr. f. Derm. u. Syph.*, 1885, Heft 1, S. 3, with reference to previous reports.

tissues. There is seen also in the growth a transitional series of bodies between the connective-tissue corpuscles and the characteristic "xanthoma-cells."

The epidermis is usually unchanged, though it, together with the papillary layer, may be slightly thinned, and there is frequently a deposit of a yellowish-brown pigment in the deeper layers of the rete. The growth is almost wholly confined to the deeper parts of the corium, though occasionally portions extend to the subcutaneous tissue and may surround the coil-glands and hair-follicles. The sebaceous glands may be few, but are unchanged and are not, as was formerly supposed, concerned in the process. There is often a deposit of pigment in the corium, both free and in the cells, but the characteristic color of xanthoma is undoubtedly due to the fat-granules.

The icterus and hypertrophy of the liver which sometimes complicate xanthoma are probably secondary and caused by the presence of the growth in the liver or in the biliary passages.

Pollitzer¹ has made a study of xanthoma palpebrarum, and states that this form of the disease is due to a slow fatty degeneration of the fibres of the orbicularis muscle analogous to the more rapid degeneration of muscles which sometimes follows acute infectious diseases. He finds the xanthoma-bodies to be fragments of degenerated muscle-fibres, and believes that this form of the disease has no connection whatever with the generalized forms.

Chambard, Morris, Crocker, and a few others believe the primary process is an inflammation which is followed by a fatty degeneration of the cells.² Balzer's conclusions as to the parasitic nature of the disease have not been verified by more recent investigators.

Diagnosis.—Milia occasionally occur in groups in the form of oval plaques upon the lids, but are distinguishable from xanthoma by the possibility of expressing their contents.

The diagnosis from all other lesions is readily made when consideration is had of the peculiar yellowish or saffron-like hue of xanthoma, and the common situation, form, and general characteristics of its plane or nodular lesions.

Pollitzer has reported a case of multiple dermoid cysts in which were present the clinical appearances of xanthoma. A similar case is now under our observation.

Treatment.—Erasion and excision are the usual methods of removing xanthomata. Care should be taken in such operations to avoid a consequent ectropion when the operation is performed upon the skin of the eyelids. The Paquelin knife is objectionable on account of the radiation of heat to the globe of the eye. With the tumor slipped through an aperture in a thin sheet of asbestos paper, such as is now found in the market, this danger may be obviated.

The modern method, however, of treatment by electrolysis is preferable to others. Caustics also have been successfully employed. Besnier employs phosphorus internally, followed by turpentine, by which the

¹ Jour. Cutan. and Gen.-Urin. Dis., 1897, p. 367.

² A discussion of this question and a résumé of literature are found in the Brit. Jour. of Derm., August, 1892.

course of the disease is said to have been relieved. Wilson, with the same end in view, employed nitro-muriatic acid, arsenic, bitters, and blue pill. McGuire reports the removal of xanthoma by applications of monochloroacetic acid.

Prognosis.—The lesions, when not removed, are liable to persist through life. Spontaneous involution is said to occur very rarely. French authors who have given considerable attention to this subject are disposed to believe that some cases of xanthoma tuberosum, with permanent xanthochromia and involvement of the inner coats of the larger vessels, may prove serious.

XANTHOMA DIABETICORUM.

(GLYCOSURIC XANTHOMA.)

This rare disorder has been well illustrated by three excellent portraits showing the features of the malady in a case reported by Robinson.¹ Instances of the disease have been also recorded since the cases of Addison and Gull (1851), by Hillairet, Morris (who was the first to claim for it an independent position in the list of cutaneous affections), ourselves,² and many others.

Symptoms.—The lesions are usually multiple and numerous, discrete or confluent, and not rarely grouped, pinhead- to pea-sized, firm, well-defined, conical or acuminate papules. At the apex may be recognized a yellowish centre with reddish areola, which may be made to disappear temporarily under pressure. The appearance when viewed at some distance is suggestive of a pustule. Subjective sensations of itching, pricking, etc., may be produced. The lesions are visible over the buttocks, loins, elbows, knees, and extensor faces of the limbs in general, the face (brows, nose), the scalp, about the angles and over the mucous surface of the mouth, and the palms and soles. But one case has been reported as occurring on the eyelids. The eruptive lesions are likely to be of sudden occurrence. After remaining upon the surface for a few months or years they may wholly disappear without leaving a trace of their existence, or the eruptive elements may in part only disappear.

Etiology.—In seventeen out of twenty-one cases reported glycosuria has been recognized; and Johnston calls attention to the fact that in nearly every case the patient has been described as stout, florid, or obese. The majority of the patients have been male subjects, and usually in a condition of fair nutrition; often they have been consumers of beer in large quantities.

Pathology.—Histologically the disease does not differ essentially from the ordinary form of xanthoma, except that the inflammatory changes are more marked, there is less connective-tissue formation, and there are fewer of the xanthoma-cells than in the common variety. The lesions, moreover, are usually found near the coil-glands and follicles. Török, Johnston, and others believe the disease to be an exuda-

¹ Internat. Atlas of Rare Skin-diseases, 1890, iv., ii.

² Paintings in oil showing the lesions in two patients were exhibited to the Amer. Derm. Assoc. in New York, 1898.



Xanthoma Diabeticorum.

(From a painting.)



tive dermatitis terminating in a granulo-fatty degeneration which is quite distinct from the heterotopic, arrested development of fat seen in ordinary xanthoma.

Diagnosis.—Those who would separate this form of xanthoma from all others base the difference between them upon the following points: in xanthoma of glycosuria the sudden evolution and involution of the cutaneous lesions; the firmness and solidity of the latter as distinguished from the softness of the ordinary forms; and the inflammatory character of the glycosuric as distinguished from the hypertrophic changes in the other variety. In xanthoma diabeticorum the yellowish apex is not at first apparent, nor in all the lesions, and, when it exists, is due to epidermal changes and not to those occurring in the corium as in xanthoma. Other characteristic features of the xanthoma of diabetic subjects are the absence of striæ and patches, the absence of jaundice and of eyelid-lesions, the presence of marked subjective sensations, the grouping of the lesions about the hair-follicles (well marked in Robinson's case), and the absence of diabetes mellitus in most of the palpebral cases on record. This side of the question is presented by Johnston in reporting a case and in giving a summary of the twenty other cases so far recorded.¹

On the other hand, it is urged by Besnier and Doyon that the glycosuria is simply an irritating cause which explains the differing symptoms of xanthoma in the two classes of patients. Surveying the literature of xanthoma, they find patients without diabetic symptoms suffering from atrocious pruritus and most of the special features claimed as peculiar to diabetic xanthoma of glycosuria. A woman, however, in middle life, recognized as the subject of diabetes mellitus (not insipidus), examined with special care, exhibited merely the common form of symmetrical and plane eyelid-lesions. It is difficult to determine what are the relations, if any, between these two forms of xanthoma.

The **Treatment** of the disease, medicinal and dietetic, is largely that of glycosuria. Robinson's patient recovered after the use of small doses of Fowler's solution. Local treatment may be employed as indicated in any case.

The **Prognosis** is favorable, all cases eventually recovering.

COLLOID METAMORPHOSIS OF THE SKIN.

(COLLOID MILIUM [Wagner], HYALOMA. *Fr.*, COLLOÏDOME MILIAIRE [Besnier]; *Ger.*, HYALOM DER HAUT.)

Relatively few cases of this rare disorder have been reported. The lesions occur chiefly on the upper two-thirds of the face, especially on the forehead and about the orbits. They consist of pinhead- to millet-seed- or even split-pea-sized, sharply circumscribed, irregularly rounded, flat papules, lemon yellow in color, having a peculiar glistening, translucent appearance suggestive of vesicles. They project but slightly from the skin, and on puncture give exit to a soft gelatinous mass, at times accompanied by a droplet of blood. Some of them may be surrounded by very slight telangiectases. They develop slowly, often

¹ Jour. Cutan. and Gen.-Urin. Dis., October, 1895; and *Ibid.*, September, 1900.

in groups, the individual papules remaining distinct even when two or more unite. Frequently a papule becomes depressed in the centre; or becomes inflamed and covered with a crust which falls and leaves a shallow depression but not a true scar.

Etiology.—The cause of the disease is not known; it occurs alike in men and women, usually after the forty-fifth year of age. A male patient presented at our clinic was twenty-five years of age only. In most of the cases reported the individuals lived an outdoor life and were much exposed to the elements.

Pathology.—This has been studied by Balzar, Besnier, Reboul, and others. Wagner's belief that the process begins in the sebaceous glands is now practically discarded. Colloid degeneration is found to affect the connective-tissue and elastic fibres of the derma, which may become involved over considerable areas. The changes are especially noticeable about the vessels and nerves and about the sebaceous and coil-glands. The glands themselves, and all the epithelial structures, except the endothelia of the vessels, usually escape. In sections examined by us removed from a clinical patient a few rete-cells and a few cells of the coil-gland ducts were transformed into or infiltrated with colloid substance. This disease is not identical with multiple benign cystic epithelioma (hidradenoma), in which the epithelial cells play an important part.

Diagnosis.—The disease is apt to be confounded with xanthoma, hydrocystoma, adenoma sebaceum, and multiple benign cystic epithelioma (hidradenoma). From the last-named disease the diagnosis is often very difficult or even impossible without the aid of histological examination.

Treatment.—The nodules may be removed with a sharp curette or by electrolysis.

ADENOMA OF THE SEBACEOUS GLANDS.

(ADENOMA SEBACEUM. *Fr.*, ADÉNOMES SÉBACÉS [Balzer and Menetrier], ADÉNOMES SÉBACÉS CANCROÏDAUX, ACNÉ CANCROÏDALE.)

The several forms of adenoma of the sebaceous glands may be assigned to two categories, the benign and the malignant.

ACQUIRED BENIGN GROWTHS are pinhead- to pea-sized, sessile, spheroidal, oval or acuminate bodies, occasionally presenting points of whitish appearance suggestive of milium. They are situated chiefly over the face (forehead, furrows beside the nose). They are always covered with an unchanged epithelium and in color present the hue of the normal skin.

CONGENITAL BENIGN GROWTHS are represented by the verrucous and vascular nævi of Pringle and Darier. They increase slowly after birth and attain a notable development at about the period of puberty. They also are found about the regions of the face named above, including the chin and the mouth. The lesions are pinhead- to bean-sized, and differ from those above described chiefly in the color they present, which varies from a yellowish white to a deep brownish red; often

the surface is vascularized by the presence of minute capillaries. They are sometimes discrete, often confluent, and may be commingled with comedones, acne-pustules, pigmented patches, and the lesions of facial seborrhœa. In the majority of cases other defects of the skin, such as warts, nævi, small papillomata, and pigment-spots, are present, while many of the patients reported have been mentally deficient or epileptic.

The two forms named above are benign lobulated tumors of the type of sebaceous adenoma; the last-named group being distinguished by delicate telangiectases over the surface and a verrucous structure.

MALIGNANT FORMS OF SEBACEOUS ADENOMA occur when the skin is in the senile state. They begin with the symptoms of an irritable acne or seborrhœa, greasy crusts being displayed here and there, particularly over the surface of the face; or comedones of unusual type; or papulo-pustules that do not pursue the course of those seen in earlier years. Ulceration attacks the lesion which at first seemed benign, and the issue is the development of an epithelioma.

Etiology.—The cause of these growths is not known. The majority of them are congenital, and those also which develop later in life may be congenital in origin. Most of the cases reported have been in the poor and in those of defective mental development, but cases are also seen in the well-to-do and intelligent.

Pathology.—The histology of these bodies has been studied by Pringle, Darier, Balzer, Crocker, Pollitzer, and others. There is hyperplasia of the sebaceous glands, which are numerous and large. Beyond this observers do not agree, and further study of the subject is necessary. Pringle described an interpapillary hypertrophy; Balzer found small cysts in both sebaceous and sweat-glands; Crocker reported an increased development of the coil-glands and hair-follicles, in addition to hyperplasia of the sebaceous glands.

Diagnosis.—The history of the disease, which begins in early life and develops gradually; the persistency and permanency of the individual lesions situated chiefly on the middle of the face and specially in the naso-labial folds; the frequent occurrence of telangiectases with the papules above described; and the absence of suppuration or ulceration will usually suffice for a diagnosis. In colloid milium the lesions are usually few in number, are situated chiefly on the frontal and orbital regions, have a peculiar yellowish, translucent appearance, and are not so much modified by telangiectases. In multiple benign cystic epithelioma the lesions occur on the forehead and also on the trunk. Both of the two last-named diseases, however, may so closely resemble adenoma sebaceum as to render the differential diagnosis impossible without the aid of histological examination.

Treatment.—Neither internal remedies nor external applications have any influence upon the lesions. The treatment is, therefore, surgical and calls for the employment of the knife, the curette, or scarification, depending upon the size, number, and location of the lesions. In several cases the latter have been removed successfully by means of electrolysis.

ADENOMA OF THE COIL-GLANDS.

Although the majority of cases formerly described as adenoma of the coil-glands are now classed with multiple benign cystic epithelioma, a few well-authenticated examples of the disorder are reported.¹ Perry² describes a case, illustrated by a chromo-lithograph, of a woman upon whose face and trunk millet-seed- to small pea-sized nodules were visible, lasting for nearly twenty years. Upon puncture a clear fluid could be expressed from each. On section the coils of the sweat-glands were found enormously increased in size, and there was pigmentation of the gland-cells.

The **Diagnosis** of this rare disorder can be made only with the aid of the microscope.

The **Treatment** is surgical, by means of the knife, curette, cautery, or electrolysis.

MULTIPLE BENIGN CYSTIC EPITHELIOMA.

(ADENOMA OF THE SWEAT-GLANDS [Perry], EPITHELIOMA ADE-
NOIDES CYSTICUM [Brooke]. *Fr.*, CELLULOME ÉPITHÉLIALE
ÉRUPTIF KYSTIQUE [Quinquaud], CYSTADÉNOMES ÉPITHÉ-
LIEUX BENINS [Besnier], HYDRADÉNOMES ÉRUPTIFS [Jacquet
and Darier], SYRINGO-CYSTADÉNAME [Török]; *Ger.*, GUTAR-
TIGES EPITHELIOMA, VERBUNDEN MIT KOLLOIDER DEGEN-
ERATION [Phillipson].)

The name selected as the title of this chapter is that given to the disease by Fordyce, whose presentation of the subject forms³ the basis of the following description.

The disease is most common on the face, neck, and upper extremities, but may develop on any part of the body. It is characterized by the appearance of small, pearly, pale, yellow or pinkish-colored tumors varying in size from a small pin's head to that of a pea. Larger lesions are exceptional. The tumors are firmly imbedded in the skin and also project above the surface; they are round or oval, solid and painless to the touch, the larger ones being tense, lucent, and freely movable. Some of the tumors are translucent, suggesting vesicles; others resemble milia and may be the seat of fine telangiectases; in others there may be a central depression which in some of the larger lesions of White's case produced an appearance closely resembling Hutchinson's crateriform epitheliomata. The lesions are discrete, and are not grouped or arranged in any characteristic manner.

In most cases the tumors are first noted at or before the age of puberty; they enlarge slowly, rarely exceeding the size of a pea, and do not ulcerate or undergo spontaneous involution. White,⁴ however, reports a case in a woman of forty-five on whose face were small typical lesions of this disease, and also others in varying stages of devel-

¹ Fordyce gives a summary of the subject in *Morrow's System*, vol. iii., p. 618.

² *Internat. Atlas of Rare Skin-diseases*, 1890-91.

³ *Morrow's System*, vol. iii., p. 620.

⁴ *Jour. Cutan. and Gen-Urin. Dis.*, 1894, p. 477.

opment up to true epithelioma of rodent ulcer type. The diagnosis was confirmed by the histological examination of a number of the tumors of varying sizes.

The cause of the disease is not known. In Brooke's and White's cases a distinctly hereditary history was obtained.

Pathology.—The views of different observers regarding the pathology of this disease are largely indicated in the names given to it by each. Fordyce reports that microscopical examination shows the tumors to be "made up of irregularly rounded, oval, and elongated masses and tracts of epithelial cells corresponding to those in the lowermost layer of the epidermis and the external root-sheath of the hair-follicle. The epithelial masses may be distinct, or made up of intercommunicating bands and tracts, in some places resembling coil-ducts. Cell-'nests' are met with as in malignant epithelioma, enclosing horny, granular, and colloid tissue. Colloid degeneration of individual cells is also encountered in the cell-masses. The connective tissue about the cell-collections is somewhat condensed, but is not the seat of any inflammatory process." It is probable that these epithelial growths originate in a downward growth and proliferation of the epidermis and external root-sheaths of the hair-follicle, and not from the coil-glands, as was supposed by some observers.

Two cases only of those so far reported have shown any tendency to become malignant. It is possible that in the two cases these changes were accidents or coincidents such as occasionally occur in connection with verruca and other benign growths, but the histological structure of the small tumors closely resembles that of true epithelioma, and, as White suggests, it is quite possible that they would all in course of time show a malignant tendency, since most of the cases observed so far have been in young subjects.

Treatment.—The treatment is wholly surgical, with knife or curette. Many of the tumors are readily expressed with slight pressure, after the skin over them has been incised. Electrolysis is suitable for the smaller growths.

LYMPHANGIOMA TUBEROSUM MULTIPLEX.—These rare growths supposedly of lymphatic vessels in the skin have been noted by Hebra and Kaposi, Pospelow,¹ Van Harlingen,² and other writers. The lesions in these several cases were practically identical, from a clinical standpoint, with those of multiple benign cystic epithelioma described above. By many observers the two diseases are thought to be the same clinically and pathologically, but Kaposi and others maintain that they are distinct in origin and in structure, stating that sections show under the microscope rounded or oval spaces, recognizable as distended lymphatic vessels by the characteristic endothelium with which they were lined. Kaposi distinguishes these tubercles from all subcutaneous cavernous tumors constituted of new-formed dilated lymphatic vessels reaching toward the skin, by the limitation in the former of the neoplastic growth to the superior parts of the corium.

¹ Vierteljahr. f. Derm. u. Syph., 1879, Heft 4.

² Phila. Med. Times, September 24, 1881.

LEUCOKERATOSIS BUCCALIS.

(LEUCOPLASIA, LEUCOMA, PSORIASIS LINGUÆ, SMOKERS' PATCHES OF THE MOUTH, BUCCAL PSORIASIS, ICHTHYOSIS LINGUÆ, TYLOSIS LINGUÆ, LEUCOPLAKIA BUCCALIS. *Fr.*, LEUCOPLASIE, PLAQUES BLANCHES DE LA BOUCHE.)

In the year 1868 Bazin described with tolerable accuracy the several conditions indicated by the names given above; and since that date the subject has been enriched by a literature contributed by Debove, Kaposi, Sigmund, Plumbe, Mauriac, Schwimmer, Ingals, and others. The title of these paragraphs is that given by Besnier and Doyon as the least misleading and the most descriptive.

The disease is manifested chiefly in the mouth, by the occurrence on the inner faces of the lips and cheeks, and on the dorsum and edges of the tongue, of sharply outlined, dull-whitish, slate-colored, or silver-whitish points, disks, streaks, bands, ribbons, or patches of an irregular shape, either flattened or slightly elevated above the general level of the mucous surface. The disease may occur in isolated points or in pinhead-sized nodules, discrete or confluent, and in cases grouped, the grouping being often in linear arrangements, following the lines indicated by the streaks or the striæ of similar composition.

The sites of election of these lesions are: the inner face of the cheek in a line following that traced by the conjunction of the teeth of the upper and lower jaw when approximated; the gums above the upper canine teeth and lateral incisors; the sulcus beside the upper and lower gums in the roof and floor of the mouth; the dorsum and edges of the tongue, where the arrangement is usually in lines along the longitudinal axis; and more rarely other parts such as the vaginal and other mucous membranes which have been involved.

When closely examined these lesions are found to be made up of a hyperkeratinized epithelium, being covered by an adherent and more or less dense pellicle, removable only by artificial measures and closely applied to the inferior stratum of the mucosa. The lesions are rough to the touch, both to the finger of the physician and to the tongue of the subjects of the disease, but are, as a rule, not painful, though at times annoying by producing a certain degree of stiffness and immobility of the parts affected. At times the membrane in the vicinity is reddened and tender.

These lesions are extremely chronic of evolution, requiring months and often years for their full development, and resisting in a remarkable way the action of topical medicaments. They may be removed without recurrence; or may recur after complete and radical ablation. If unmolested and not undergoing resolution (a termination somewhat doubtful of occurrence), they usually, by reason of increased density, crack or fissure at one or another point, the fissure extending to the derma and arousing a local inflammatory process with the production of pain and distress. The surface is then prone to exfoliate and ulcerate, and epithelioma of the mouth may result.

The proportion of the benign cases to those which result in epithelioma

is not determined. Every leucokeratosis, however, may prove the initial stage of an epithelioma, and the treatment of the former is, therefore, a matter of no little consequence.

The **Etiology** of these cases is suggested by some of the names given above. The disorder occurs almost exclusively in the mouth of men, and usually after middle life. Unquestionably, the irritation produced by tobacco, whether used in smoking or chewing, and the influence of carious teeth or those with sharp edges after fracture irritating the edge of the tongue, are all important. The resemblance of these lesions to the mucous patches of syphilis is obvious; and it is believed that syphilis, when not actively efficient in the production of leucokeratosis buccalis, may be one of its indirect causes. It is, however, important to note that all the symptoms here described occur in persons who have never suffered from syphilis; and such symptoms are in the latter class fully as intractable as in others.

Pathology.—It is not definitely known if the primary change is a pure hyperkeratinization of the epithelium or an inflammatory process of the papillary layer. The horny layer is hypertrophied, the cells retaining their nuclei. In the derma there is always more or less inflammatory infiltration, and often the papillæ are partially obliterated. Fordyce states that overgrowth and proliferation of the interpapillary processes are exceptional. Leloir insists that the epitheliomatous process always begins not at the level of the hyperkeratosis of the mucous membrane, but below the fissure or other lesion induced by the induration of the plaque or streak, indicating, in other words, that the epitheliomatous change is rather an accident than an essential part of the process.

The **Diagnosis** is chiefly from syphilitic lesions of the mouth, which should be recognized, as a rule, by their softness and tendency to ulcerate, as well by their situation, which is far less distinctive than in the case of leucokeratosis of the mouth. A history of infection and of symptoms of the disease in other regions of the body would usually indicate the nature of the process.

The only malady likely to be confounded with leucokeratosis of the mouth is lichen planus; and it is important to note that some confusion exists on this point in several descriptions of the two diseases.

In lichen planus of the inside of the lips there may be recognized over the tongue, the palate, and other parts, dents, smooth or fissured plaques, rings, festoons, linear striæ, or disks covered by a silver-whitish pellicle. It is clear that the distinction between these and leucokeratotic lesions is in a high degree obscure, and for the present the most that can be done is to search with special care for other symptoms of disease upon the cutaneous surfaces of the body pointing to either lichen planus or to syphilis.

The **Treatment** of leucokeratosis of the mouth is first by abstention from all local irritants (tobacco; highly spiced, heated, acetous, and iced particles of food and drink), by the care of the teeth, and by the employment of soothing sprays or lotions containing potassium chlorate, boric acid, balsam of Peru, iodized phenol, myrrh, borolyptol, or muriated iron.

Silver nitrate may be applied to any ulcerated or fissured points, both in solution and by sweeping the solid crayon over the surface. The French make use of the salicylates in the same way.

Destruction or removal of the lesions may be secured by the employment of caustics, chemical or galvano-cauteric; by erosion with a curette; or by surgical ablation. When practicable, the burr of the dental engine may be used after injection of cocaine muriate. Where the patches are not too dense and extensive this has generally been productive of good results.

Sherwell¹ reports complete removal of the patches by the use of undiluted liquor hydrargyri nitratis. The mouth is stuffed with cotton to protect adjacent parts; the solution is applied and allowed to remain from fifteen to twenty minutes, after which it is neutralized with sodium bicarbonate. If necessary, the application may be repeated two or three times at intervals.

Pierce² was successful in one case after rubbing into the patches pyoktanin-blue, followed immediately with an aqueous solution of anilin-oil. The applications were made daily for three months.

The **Prognosis** is fairly favorable in the case of all subjects of the disease who consent to deny themselves absolutely the luxury of tobacco-usage in every form, and who can follow a prescribed hygienic and medicinal course. For all others there is danger of epithelioma.

MYOMA.

(Gr. *μῦς*, muscle.)

Cutaneous myomata are divided by Besnier³ into two classes: simple myoma, or liomyoma; and dartoic myoma.

DARTOIC MYOMA is much more common than is the other form, and is of chief interest to the surgeon. It is usually single, though occasionally multiple, and occurs most frequently on the mammæ, the labia majora, the penis, and the scrotum. The tumor develops slowly, finally attaining a size varying from that of a small nut to that of an orange, and may be sessile or pedunculated. In most cases reported pain has been slight or absent, though it was marked in a case reported by Virchow. Under the influence of cold and local irritation the tumor usually contracts or may show a slow vermicular motion. Some of these tumors are composed almost entirely of non-striped muscle-fibres, others are mixed with other tissues to form a FIBROMYOMA, an ANGIOMYOMA (MYOMA TELANGIECTODES), or a LYMPHANGIOMYOMA.

SIMPLE MYOMA is rare, only eighteen cases⁴ having been reported. Its lesions are usually multiple and occur most frequently on the upper extremities, affecting chiefly the extensor surfaces, but they may occur on other parts of the body. They begin as minute round

¹ Jour. Cutan. and Gen.-Urin. Dis., 1899, p. 185.

² Chicago Med. Recorder, xii., p. 178.

³ Annal. de Derm. et de Syph., 1880, p. 25; and Besnier-Doyon translation of Kaposi, vol. ii., p. 346, with reference to all reported cases.

⁴ For a résumé of all cases reported to date, see Crocker, Brit. Med. Jour., Jan. and Feb., 1897; and Roberts, *Ibid.*, April, 1900.

or oval macules or papules which develop slowly to the size of a small pea or bean, occasionally becoming larger. At first readily effaced with the finger, later they become firm and elastic to the touch, are usually limited to one or two regions of the body, where they appear in patches without definite arrangement or grouping, and are pinkish, reddish, or of the color of the normal skin. In the beginning the growths are usually insensitive, but in most cases after slow evolution become painful on pressure and in some instances they are the seat of paroxysms of severe pain which occur spontaneously and at irregular intervals. Nearly all the cases reported have been in elderly people and in men. Some of the tumors may undergo involution, but usually they tend to increase in size and in number. Histological examination shows that they are limited to the derma proper, and are composed chiefly of unstriated muscle-fibre mixed with some elastic tissue, with a few vessels and nerves, and are frequently developed about the hair-follicle. They are probably derived from the erector pili muscles.

In a case under observation multiple pinhead- to large bean-sized congenital tumors were situated near the sterno-cleido-mastoid muscle of a girl nineteen years old. These were exquisitely sensitive to pressure, were capable of slight vermicular motion when irritated, and examination of the largest, after removal, disclosed smooth muscular fibres, and, in small proportion, terminal filaments of cutaneous nerves.

The **Diagnosis** in well-marked cases is not difficult, but in some instances the recognition of the disease must depend upon a microscopical examination. Myomata have been mistaken for xanthoma tuberosum, for keloid, for lymphangioma tuberosum multiplex, and for neuro-fibroma. The last-named tumors are painful from the beginning, and usually develop in the course of a nerve.

The only successful **Treatment** is by excision.

ANGIOMA.

(Gr. ἀγγεῖον, vessel.)

Angiomata are divided into those composed of blood-vessels and those formed of lymphatic vessels. The former are much more frequent and variable in character.

Symptoms.—Blood-vascular new-growths occur in three forms: nævus vasculosus, telangiectasis, and angioma cavernosum.

Nævus Vasculosus (NÆVUS FLAMMEUS, NÆVUS SANGUINEUS; Ger., GEFÄSSMAL).—This term is limited to those vascular anomalies of the skin which are either visible at birth or become developed in a brief period thereafter. They commonly occur as irregularly outlined or distinctly circumscribed, smooth spots, patches, or maculations, varying in color from light red to deep violet and port wine, and are either flat or very slightly elevated above the general level of the integument. From this type wide variations are noted, in the development of pea-sized papules or tubercles to tumors even of large size; pulsating and aneurismal in character; spongy or relatively firm; fading or more rarely persistent under pressure; superficial or deeply seated; venous or arterial in their connections; single or numerous;

and in either case limited to a small area or involving a relatively large surface. They are of most common occurrence upon the head, but are seen also on the trunk and extremities. Often they are the sole lesions of the skin present in a single individual; in other rarer cases they complicate moles, warts, and lymphangiomata.

The surface of these lesions is usually smooth, though it may be rugous. They are generally compressible, losing their habitual color when the blood is forcibly pressed out from the loose meshwork of vessels of which they are composed, and becoming turgid and deeply tinted when the blood is driven into their tissue, as in the face in the act of sneezing.

The course of these lesions varies with their essential character. Of the simpler varieties, the larger number increase somewhat in extent and development till they have attained a maximum size, and then they either persist indefinitely or accomplish a species of involution after agglutination of the vascular walls, leaving a whitish, cicatriform, occasionally pigmented surface. Others extend indefinitely, involving the neighboring mucous surfaces, subcutaneous tissue, and deeper structures, forming vast tumors, destructive not only by their tendency to extension, but by their mechanical effect. Fortunately, these extreme developments are rare. Much more commonly vascular nævi furnish the forms known as "port-wine mark" or "claret-stain," which awaken no subjective sensations, and are usually of clinical importance in consequence of the marked disfigurement which they produce.

Occasionally, especially in the case of infants but a few days old, phagedæna or gangrene will suddenly occur in these patches without appreciable cause (probably in consequence of the occurrence of thrombus), and the entire tumor will be removed, the line of demarcation of the destructive process being exactly limited to the border of the angiomaticous tissue. The scar resulting is superficial, and becomes smoother in course of time. In this way may occur spontaneous cure of nævi of considerable size existing on the head and genitalia of infants.

Telangiectasis (NÆVUS ARANEUS, "SPIDER CANCER").—Telangiectases are acquired dilatations often combined with new formation of blood-capillaries, which appear at periods of life other than at birth or a few months later; and are, therefore, distinct from the congenital forms of the disease. They are commonly first observed in adult life and occasionally multiply with advancing years. They occur in diffuse and localized forms.

Diffuse, generalized telangiectasis is exceedingly rare. Hillairet and Vidal have each observed one such case in individuals of both sexes; the condition being apparently due to systemic disturbance.

The localized forms are betrayed by the occurrence of flat or slightly elevated, pinhead- to pea-sized macules; diffuse patches; linear ramifications of individual vessels; or contorted congeries of a plexus of the latter, all exhibiting the variations in color of nævi vasculosi, but usually of pinkish or violaceous hue. They are unaccompanied by subjective sensations, are evidently non-inflammatory in character, and

are simple or multiple lesions chiefly upon the face, but also upon the neck, the back of the hands, the thighs, and other parts of the body. They are not rarely observed in connection with other diseases. Thus they occur in the vicinity of the lesions of lupus erythematosus, scleroderma, acne rosacea, cicatrices, and about the contour or over the surface of many malignant tumors. They may, therefore, have either an idiopathic or symptomatic character.

The term *ROSACEA*, as distinguished from acne rosacea, is employed to designate that condition in which the skin, of the face particularly, is affected with dilatation of the capillaries. (Consult in this connection the chapter on Acne Rosacea.)

The conditions here described as *nævus vasculosus* and *telangiectasis* are displayed in forms which, apart from the question of congenital origin, offer the widest differences and the most bizarre combinations. The so-called *nævus flammeus*, *nævus araneus* (spider-cancer), *nævus vinosus*, "mulberry-," "strawberry-," and "mother-marks" are all examples of these combinations.

The lesions may be congenital. There is no proof that they are due to antenatal maternal impressions, though the influence of the nervous system in deciding the area of limitation of the congenital forms is exceedingly distinct, as, for example, the definition of a port-wine mark in the skin-area supplied by one supraorbital nerve.

Angioma Cavernosum (TUMOR CAVERNOSUS).—Cavernous angioma is distinguished from the angiomatous lesions described above by the peculiarities of its formation. It consists of a dense framework of new-formed connective tissue, inclosing loculi or chambers of varying capacity, containing blood and communicating not only with each other, but with the larger vessels in the vicinity. Whether these blood-spaces originate in the fibrous felt-work of the derma which later establishes a vascular connection, or in the vessels themselves, or whether they are constituted by a mechanical dilatation of such vessels in consequence of a new-formed connective tissue in the adventitia, has not been determined. According to Virchow, the lesions arise generally from coalescence and dilatation of vessels. Other causes are explained by the earlier formation of a contracted cicatricial tissue by which vascular distortion occurs. (Rindfleisch.)

Cavernous angiomata are said to be rarely congenital, developing soon after birth, and to be both superficial, deep, circumscribed, and diffuse. Sometimes they originate from a *nævus* or superficial *telangiectasis*. Often when fully formed they are distinctly encapsulated. The diagnosis is between cysts, fibromata, lipomata, and sarcomata. The rarity of this affection in dermatological practice may be explained by the surgical features of many cases. In five years no instance of *angioma cavernosum* was reported in the statistical tables of the American Dermatological Association.

Etiology and Pathology.—The causes of the several forms of angioma named above are obscure. The symptomatic *telangiectases* are undoubtedly to be explained by obstruction to the circulation occa-

sioned by the tumor or other lesion to which they are accessory. The foundation for the vulgar belief that maternal impressions are responsible for the so-called "mother's marks" is very slight. The reputed resemblance of the latter to various flowers and fruits generally requires for its recognition a stretch of the imagination.

Anatomically, these lesions are recognized as due to dilatation and new formation of venous and arterial capillaries in the superior portions of the derma, the vessels of the newly formed plexus freely communicating with each other. Generally there is a simultaneous new formation of connective tissue constituting the framework of the growth, which varies considerably in the different forms of the disease. Lobules constituted of coils of capillary vessels are often separated by it into distinct masses. According to Heitzmann, the large spaces of angioma cavernosum imitate the structure of the corpora cavernosa of the penis, and are filled with venous blood, being separated from each other by a scanty fibrous connective tissue.

Billroth states that the new formation has its origin in the vascular network surrounding in basket-like forms the fat-lobules, follicles, and glands of the skin. Embryonal, vascular growths spring from these, and as they multiply and develop are enforced by proliferation of fibrous, connective, and muscular tissue. The color depends largely upon the preponderance of arterial or of venous capillaries in the new formation.

Diagnosis.—The ordinary lesions of angioma are readily recognized by their color, size, shape, and obvious vascular constituents. Anderson calls attention to the importance of differentiating encephalocele due to the failure of ossification of the ethmoid and frontal bones at the root of the nose. Operations upon such tumors supposed to be angiomatous in character have resulted fatally. Lobulation, great distention (when a child is crying), a superficial rather than deep and complete vascularization of the smooth and glossy skin of the tumor, and a double pulsation, all point to frontal encephalocele.

Treatment.—The treatment of this group of new-growths is, in general, limited to a series of local surgical procedures. These operations all have in view either the destruction of the new-growth or the artificial production of an inflammation, in order to obliterate, to an extent sufficient to interfere with the transmission of the blood-current, the lumen of the capillaries of which the neoplasm is composed.

First among these methods is electrolysis. One or a set of several fine cambric needles, with their points at the same plane, are connected with the negative pole of an ordinary zinc and carbon battery of ten to twelve cells. The points of the needles are quickly passed into the tissues, and there held for a period of between ten and thirty seconds, according to the effect produced after completion of the circuit, with a current of from one to two milliamperes. The new-growth is thus blanched in the vicinity of the needles, this effect disappearing in the course of a few moments.

In about three weeks the curative result of the operation becomes apparent. According to Fox,¹ of New York, the objections are that

¹ N. Y. Med. Record, Feb. 18, 1882, p. 188.

the operation is sometimes painful and tedious, and may occasionally result in the production of suppuration, superficial sloughs, minute keloid-like elevations, vascular nodules, depressed scars, or superficial ulcers. In scores of cases, however, there is no production of results worse than the original disfigurement. Usually the success is complete.

The method of Sherwell¹ is by multiple puncture with a set of fine needles in a holder similar to that described above. These are dipped in a 25 to 50 per cent. solution of chromic acid, and then made to penetrate the part to be attacked. The bleeding is readily arrested by pressure, and then the patch is covered with several layers of flexile collodion. This procedure is of value in circumscribed patches of superficial character and relatively limited area. By it one can succeed in removing port-wine marks with the result of producing a somewhat irregular cicatriform tissue much less disfiguring than the original blemish.

Squire's operation is done upon previously frozen patches with the aid of an instrument which destroys the vessels by making numerous crossed and closely spaced linear incisions, parallel to each other and in a plane obliquely directed to that of the integument. Here also bleeding is arrested by pressure, exerted before the circulation is restored. The operation has been, in hands other than his own, attended at times with unsatisfactory results.

Sodium ethylate, a compound in which the radical ethyl in ethylic alcohol is united with sodium, is a caustic recommended by Richardson² in the treatment of nævus. It is applied by means of a brass rod. A first application usually results in the formation of a dense crust under which the nævus contracts; and repeated applications are made at intervals of a few days till the desired result is obtained. The sodium ethylate should be pure, and the crusts should not be disturbed till they fall spontaneously. In one case there was a persistent redness of the resulting scar that was decidedly open to objection.

Other methods employed are the ligature when practicable; puncture with incandescent needles; topical application of caustics other than those named above, such as potassium hydroxide, nitric and carbolic acids, and corrosive sublimate; and total excision, the latter being practicable in relatively small growths. Larger growths also can be removed and the surface covered with skin-grafts. The galvano-cautery and the thermo-cautery are both valuable in the destruction of capillaries. For telangiectasis and nævi no larger than a pea the Paquelin knife is an efficient resort. The old method of multiple vaccination about and upon the involved area is sometimes followed by good results, and whether in consequence of the retraction of tissue under the influence of the inflammation excited, or of the destructive results of the suppuration induced, or of an indefinite caustic effect, is not clear.

These results may be partly imitated by the induction of superficial pustulation and suppuration through the medium of tartar emetic and

¹ Arch. of Derm., October, 1879.

² Lancet, November 9, 1878.

croton-oil, methods which should be considered clumsy in the light of recent successes obtained by more manageable expedients.

Injections with carbolic acid and ferric chloride in a few cases have been followed by fatal results, but are at times successful.

Coombs¹ has modified somewhat the method most in vogue, by passing fine silver wires through nævus-growths, and connecting the extremities with a Bunsen battery. When the wires are heated the circuit is broken, and the ends of the wires are disconnected from the battery and united to each other, being left *in situ* and covered with lint and plaster. The current can then be passed repeatedly without reinsertion of the wires, and the latter need be withdrawn only when the cure is complete.

The **Treatment** of angioma cavernosum requires surgical interference.

The **Prognosis** in any case of angioma rests upon the method of treatment adopted for its removal. In the larger number of cases the lesions, having attained a maximum development, persist without further pathological change, constituting a deformity rather than a disease. Physiological alterations in the color of such lesions occur under the influence of changes in the circulation.

ANGIOMA SERPIGINOSUM.

(INFECTIVE ANGIOMA, NÆVUS LUPUS.)

This disease has been described and figured by Hutchinson,² Jamieson, Lassar, Joy, White, and others. It is one of the rarer affections of the integument.

Symptoms.—The elements of each group of lesions are bright-reddish puncta, resembling grains of Cayenne-pepper, arranged in oval or circular rings which are definitely outlined, and are a centimetre or more in diameter. The “infective satellites” are outlying points or patches where the disease is spreading. This extension is usually at the outer border of one of the annular groups of lesions. The color varies from a light- to a deep-reddish hue or purple; tints which are due to the vascularity of individual lesions. The color can at times be made to disappear on pressure.

The parts chiefly affected are the shoulder, the leg, the elbow, the ear, the arm, the hand, and the chest. The disease may occur in infancy or adult years. Its evolution is slow, and usually unproductive of subjective sensations. Occasionally the tufts of dilated capillaries which constitute the reddish points are not grouped in a circinate or other special arrangement, but simply irregularly distributed over the affected surface.

Etiology.—The cause of the disease is unknown. In a case under observation in a female infant the lesions developed as a sequence of a congenital nævus of the vulva. Hutchinson has made a similar observation. The affection has been noted more often among male patients. One case is supposed to have originated in violent muscular exercise.

¹ Lancet, 1881.

² Arch. of Surgery, vol. i., Plate IX.

Pathology.—The disease, being at first but obscurely understood, was until recently supposed to be one of the several expressions of lupus and was for that reason assigned one of the names given above. Examination of tissue removed from a patient whose case was fully reported by White,¹ which was in all points typical, reported upon also by Darier, Councilman, and Bowen, indicates that the disease is an angiosarcoma. Darier describes it as *sarcome angioplastique réticulé*. The corium was found well filled with small-cell infiltrations, and these cells had an epithelioid nucleus. There were abundant proliferation of the endothelium and perithelium and a new formation of vessels.

Diagnosis.—The disease is to be recognized by its vascular puncta and by their special tendency to grouping and extension through a serpiginous process never seen in simple telangiectases, nor in common forms of *nævus vascularis*.

The **Treatment** is by surgical ablation or destructive cauterization.

LYMPHANGIOMA.

In the present state of knowledge on this subject it is not always possible to draw sharp dividing-lines between lymphatic new-growths on the one side and simple lymphangiectasis on the other. It is probable that the two processes often are associated.²

LYMPHANGIECTASIS, uncomplicated by growth of new vessels, may occur in the superficial or deep lymphatics. When superficial, pinhead-to pea-sized, isolated or grouped vesicles form which have the color of the normal skin, which disappear temporarily under pressure, and which do not break easily, but on rupture give exit to a continuous or intermittent flow of lymphatic fluid. Elliott³ describes a case of this kind in which the vesicles bordered old scar-tissue and were seemingly identical in character with the lesions of lymphangioma circumscriptum, but histological examination showed them to be formed by simple dilatation of the lymphatic capillaries, due probably to mechanical obstruction.

Lymphangiectasis of the deeper vessels often produces no change visible on the skin, and can then only be recognized by palpation, or it may be displayed in raised, irregular cords, or in chains of nodules. Following injuries or inflammation it may be acute, but usually it is chronic, and occurs most frequently on the lower extremities and in parts in which the return current of the circulation is in some way impeded. The skin may become the seat of soft nodules which may rupture and form lymphatic fistules; but more frequently the greatest changes occur in the deeper structures, resulting in elephantiasis, in phlegmon, or in lesions of periosteum and bone, the skin of the affected region being œdematous, infiltrated, ulcerating, or cicatricial.

SIMPLE LYMPHANGIOMA may occur upon any part of the body in the form of circumscribed, elastic tumors made up of enlarged lym-

¹ Jour. Cutan. and Ven. Dis., 1894, p. 505.

² For review of literature of the subject, consult Francis, Brit. Jour. of Derm., 1893, and Roberts, Ibid., 1897, p. 309.

³ Jour. Cutan. and Gen.-Urin. Dis., 1894, p. 137.

phatics which are the result partly of dilatation of previously existing vessels and partly of new-formations. The skin over such tumors may be unchanged or it may be reddened and thickened. In more extensive cases there is hypertrophy of the surrounding tissues as in deep-seated lymphangiectasis. Many of the diffuse forms of lymphangioma constitute firm or lax tumors of such size as to be termed ELEPHANTIASIS LYMPHANGIECTATICA or PACHYDERMIA LYMPHANGIECTATICA. These tumors often contain large lymph-filled sacs or lacunæ, enveloped in hypertrophied muscular and connective tissue, and an œdematous integument. Some of the elephantiasic deformities of this character are fully as enormous as the extreme distortions of elephantiasis proper. Upon the tongue the condition is called MACROGLOSSIA, and upon the lips MACROCHILIA.

LYMPHADENECTASIA is a name given by Virchow to tumors usually in the axillary or inguinal regions, where the lymphatic vessels in the lymphatic glands dilate or multiply so as to form large tumors. The lymph-scrotum due to the presence of the *filaria sanguinis hominis* is described elsewhere.

Simple lymphangiomata may be congenital. Their cause is unknown. It is supposed that they are produced by toxic or other irritating influences. They are often the seat of a recurrent, circumscribed inflammation of erysipelatous type. Anatomically the lesions are found to consist of greatly developed lymphatic vessels and spaces, lined with epithelium and enveloped in small-celled connective tissue-stroma. The treatment, of the larger lesions only is surgical.

CYSTIC LYMPHANGIOMA belongs to the domain of surgery. It occurs in the form of multilocular cysts, usually congenital in origin and most frequently situated in the neck.

Lymphangioma Circumscriptum.

(LYMPHANGIOMA CAVERNOSUM, LYMPHANGIECTODES, LYMPHANGIOMA CAPILLARE VARICOSUM, LUPUS LYMPHATICUS. *Fr.*, ANGIOME CYSTIQUE.)

This is practically the only form of lymphangioma entitled to special consideration by the dermatologist. It is a rare form of skin-disease and is well illustrated in the case reported by Morris.¹

Symptoms.—The characteristic lesions are small, deep-seated vesicles generally described as resembling frog's spawn. They are usually closely crowded in irregularly shaped groups from eight to twenty millimetres in diameter with normal skin between. These groups have no regular arrangement or distribution. There are sometimes a few scattered vesicles about or between the borders of the groups which may coalesce to form new patches. There are usually several of these groups, but they are confined, as a rule, to one small region of the body. The most common sites, according to Francis, who has collated reports of twenty-eight cases, are on the upper parts of the extremities.

¹ Internat. Atlas of Rare Skin-diseases, 1889, No. 1.

In a large majority of the cases reported the lesions occurred on the left side of the body.

The vesicles are deep-seated with thick walls, and vary in size from that of a pinhead to that of a small pea. The newer and scattered vesicles may be colorless or have a yellowish or pinkish tinge, but the skin over the older lesions may hypertrophy and produce growths that are easily mistaken for warts, and may even result in decided warty projections. Other lesions may be more or less covered with telangiectases and vascular dots or tufts which may be present to such an extent as to obscure the primary vesicle-formation. When punctured the lesions give exit to clear, colorless fluid, which at times may be tinged with blood, the result of hemorrhage into the vesicle.

In some cases the lesions and skin about them become the seat of a recurrent inflammation of erysipelatous type,¹ such as not infrequently complicates other forms of lymphangioma. Probably as a result of these attacks of inflammation there are often infiltration, thickening, and even true hypertrophy of the deeper layers of the skin, forming a sort of local elephantiasis.

The disease in most cases reported began in early childhood and developed very slowly, often remaining stationary for years. In but one case has spontaneous involution been reported.

Etiology.—As the disease usually makes its appearance in infancy or early childhood, it is probable that its origin is due to some congenital defect. It has appeared a number of times in connection with *nævi*. It has followed surgical operations, bordering the scars produced by the operator; it is possible that such cases are simple lymphangiectases of the capillary vessels due to blocking of the larger channels by the scar-tissue.

Pathology.—The vesicles, or cysts, are found on section to be situated in the upper part of the corium. These cysts are shown to have an endothelial lining and are undoubtedly dilated or newly formed lymph-capillaries. Immediately about the cysts and dilated lymphatics in an early uncomplicated lesion Bowen found considerable infiltration of round cells, but no other changes in the corium, while the epidermis was slightly thinned. In older lesions there is hypertrophy of the epidermal layers, and sometimes of the deeper parts of the corium. In other cases there are more or less dilatation and apparently new growth of the blood-capillaries. This change in the blood-vessels may be slight or so marked as to form the chief feature of the disease both clinically and pathologically. In consequence, confusing reports have been made by different observers regarding the structure and origin of these growths, many of which seem entitled to the name of hemato-lymphangioma.

Treatment.—The treatment is surgical. The growth may be removed by excision or with the cautery. Electrolysis has been of service in some cases and should be given further trial. In several instances the lesions have recurred after complete removal.

¹ Cf. White's report, *Jour. Cutan. and Gen.-Urin. Dis.*, 1894, p. 47; also Bowen's article in *Twentieth Century Practice*, vol. v., p. 687.

XERODERMA PIGMENTOSUM.

(ANGIOMA PIGMENTOSUM ET ATROPHICUM, ATROPHODERMA PIGMENTOSUM, DERMATOSIS KAPOSÍ, MELANOSIS LENTICULARIS PROGRESSIVA, LIODERMIA CUM MELANOSI ET TELANGIECTASI.)

More than seventy-five cases of this disease have been recorded; and these by Kaposi, Glax, Crocker, Vidal, Pick, Neisser, Geber, Taylor, Duhring, White, and others. Tables have been compiled by Kaposi,¹ Archambault,² and Lukasiewicz,³ including seventy-three cases. The disease results ultimately in a diffuse idiopathic cutaneous atrophy, but this condition is preceded by a general hyperæmia with vascular dilatation; the production of numerous punctiform, bright-red, pinhead- to pea-sized, flat or raised telangiectases; and disseminated, brownish, and yellowish-brown macules, varying in extent, between which form superficial, whitish and glossy, atrophic depressions, like the cicatrices of variola. The regions involved are, as a rule, the exposed surfaces, viz., the face, ears, neck, shoulders, and chest to the third ribs and even to the lumbar region, the arms and back of the hands, occasionally the legs and the dorsum of the feet. The yellowish-brown, freckle-like spots are soon after their appearance intermingled with superficial cicatrical depressions, either unnaturally whitish in hue or of the color of the normal skin. The punctiform or linear dilatations of the vessels, usually numerous, furnish a striking contrast with the freckled and pigmented parts. In some parts the skin is of parchment-like thinness; in others it is furrowed, laminated, and split, as if dry or brittle. It is usually deprived of its normal suppleness, is retracted, and is often attached to the subdermic tissue.

The disease commonly begins in the first or second year of life, and progresses continuously. The order of occurrence of the lesions as given by Kaposi is the freckle-like pigmentations, surmounted in the course of a year or two by telangiectases; then a gradual disappearance of the latter and occurrence of the cicatrical depressions; finally a diffuse atrophy of the skin. New pigment-spots continue to form, so that a given case usually presents all types and grades of lesions. Observers of these cases differ somewhat as to the order in which the several lesions of the disease appear; and Duhring thinks it possible that no definite order is observed in the evolution of the symptoms. White, in the case under his observation, could trace no transformation from a pigment-macule into a telangiectatic lesion.

The melanosis is at times so uniform and diffuse as to suggest the dark tints of the Spanish skin, as in White's case, with a dense spattering of a still darker hue and a blackish scrotum. The atrophic or leucodermic condition of the skin may coexist with the melanoderma, and present large well-defined areas totally devoid of pigment where the skin may have a pinkish tint. The ears may thus come to

¹ Wien. med. Woch., 1885.

² Dermatoses de Kaposi. Bordeaux, 1890.

³ Arch. f. Derm. u. Syph., 1895, Band xxxiii., S. 37.

resemble tanned sheepskin. The skin soon becomes furrowed, contracted, and as dry as parchment; and thus is readily developed an eczema or a superficial degeneration, including ulceration. A species of furfuraceous desquamation also occurs in patches. The faces of most patients exhibit a peculiar checkered appearance, from the uniform dissemination of the pigmented macules over the skin. Ectropion, with ulcerative keratitis, may occur. In the course of years verrucous growths appear, starting usually in the pigmented spots, either epitheliomatous, sarcomatous, or angiomaticous in character. They may be single or many; may be confined to the skin or develop in the viscera; and usually lead to fatal results in a few or many years. Often the general health seems, for long periods of time, to remain unimpaired, the subjective sensations being slight. Both sexes in early life seem equally predisposed to this disease, though the large number of members of single families affected with its symptoms indicates the importance of predisposition and heredity in point of etiology. It is usually manifested before the third year of life.

Pathology.—The disease probably begins as a proliferation of connective tissue in the papillary layer, with involvement also of the vascular endothelium, followed in some points by retraction and in others by both ectasis and new formation of vessels. By Kaposi, who has the honor of first naming and describing the disease, the irregular accumulation of pigment is regarded as consecutive to the vascular changes. The rete-pegs extend deeply below; there are ectasis of the glands and epithelial degeneration.

By the French the disease is generally regarded as a pigmentary epithelioma or “epitheliomatous lentigo” (Quinquaud), the connection between the neoplasm and the pigment-anomaly being regarded as similar to that recognized in melanotic sarcoma.

The **Etiology** of the disorder is exceedingly obscure. A congenital predisposition is shown by the occurrence of several cases in one family; most of the patients have been females. There is a very singular disposition of the disease to select one sex in different families. In forty-three cases collected by Kaposi there were six times, two; four times, three; and once, seven brothers or sisters affected with the disease. The age of the patients first exhibiting the disorder is from the first to the second year. Schwimmer has reported a case occurring in the thirty-fifth year. Unna believes it possible that the action of light upon the skin has an influence in the production of the disease.

The **Diagnosis** is chiefly from scleroderma, but as the latter always begins with induration of tissue, and as xeroderma pigmentosum always begins with either erythematous or pigmented spots, the distinction is clear. In a case of scleroderma, too, apart from its onset at a later period of life, the pigmentations are late rather than early; and the telangiectases are found in circumscribed scleroderma as a violet-tinted border about a patch; never as points, nodules, and stellate markings interspersed among pigmented spots and depressions. *Lepra maculosa* is characterized by marked anæsthesia in and about the pigmented and non-pigmented areas; further, its course is toward

mutilations of the body, and even at an early period there may be vesiculation.

The **Treatment** of the disease is limited to amelioration of the condition of the skin by means of local applications varied to meet the indications as they arise. Surgical ablation of tumors, with electrolysis of smaller lesions, may be employed to prevent or postpone a fatal termination.

The **Prognosis** is in the highest degree unfavorable, as most of the patients succumb to marasmus in from ten to twenty years.

RHINOSCLEROMA.

(Gr. *ῥίς*, or *ῥίν*, the nose, and *σκληρός*, hard.)

Symptoms.—A knowledge of this rare disease, first described by Hebra and Kaposi in 1870, has been obtained from a study of some one hundred cases observed by these and other authors. The following is a concise description of the malady as thus presented.

The disease commonly begins in the septum or a single ala of the nose, without inflammatory symptoms. The involved parts slowly enlarge, and become finally as dense as ivory. The individual lesions are flat patches, or elevated and circumscribed nodules, papules, and tubercles, painful upon pressure, movable to a certain extent over underlying tissues, and covered either by a normal integument, or by a light or dark-red, shining, vascular epidermis. Neither hairs nor glands are discernible over the lesions. As the disease progresses the alæ become enlarged, flattened, and so indurated that they cannot be pressed together, while respiration may be impeded by stenosis of the nares. The process may extend to the neighboring parts, involving thus the upper and lower lips, gums, velum, epiglottis, larynx, trachea, and jaws, the teeth meanwhile falling from their sockets and the soft palate becoming in some cases perforated. Involution of the process has not been observed, and the lesions do not degenerate by ulceration. Max Zeissl,¹ however, reports a case in which there was ulcerative destruction of the entire left nostril, as well as of the tip and right ala of the nose. Occasionally superficial excoriations have occurred, but very rarely a diminution in the consistency of the mass. The disease pursues a chronic course, requiring years for its development; and though the affected parts are painful on pressure they are otherwise not the seat of subjective sensation.

Etiology and Pathology.—The disease is observed between the fifteenth and fortieth years in persons of all social conditions and in individuals of both sexes, free from syphilitic, strumous, tubercular, and other cachexias.

Kaposi originally observed, as anatomical lesions of the disease, a dense infiltration of the corium and its papillary layers with small, closely packed elements, which he recognized as a true new-formation. He considered this as analogous to small-cell sarcoma, inasmuch as Mikulicz, Geber. and Billroth have seen some of the elements of the

¹ Wien. med. Woch., 1880, p. 621.

neoplasm undergoing the osseous transformation common in sarcomatous tumors.

In 1882, however, A. von Frisch, after examining tissue removed from lesions of rhinoscleroma in twelve patients, found in the cells and between them in the interpapillary fissures of the connective tissue bacteria distinctly rod-shaped, one and one-half times longer than broad. These germs were successfully cultivated, but experimental inoculations with culture-fluids thus obtained were negative in results. Dreschfield¹ found in sections of tissue obtained from a patient of Payne's numerous bacilli less slender and smaller than those occurring in tuberculosis and with slightly thickened extremities. These were unlike those exhibited at the Berlin Congress by Paltauf, who considers them closely related to Friedländer's pneumococcus. Barduzzi, Pellizari, Cornil, Alvarez, Lustgarten, and others have added to the evidence in favor of the parasitic nature of the disease.

The bacilli are found encapsulated in a colloid-like substance and in series of two and fours. They occur in the lymphatic ganglia, in the giant-cells of the neoplasm, and in protoplasmic masses corresponding to these or to their degenerate nuclei. Pawlowsky, of Kieff, in 1890, demonstrated that the bacilli of the disease are pathogenic for the lower animals. Besnier and Doyon, however, pointing to the limitation of the disease to Austria, reject a parasitic origin for the disease. Mibelli, who has given the subject careful study, found two kinds of cells characteristic of the process: one a dropsical and the other a colloid cell. He thinks these types are the result not of cell-degeneration, but of the presence of zoöglea, a mucous substance produced by the bacilli.

Diagnosis.—The disease can hardly be mistaken for another in consequence of its situation, the disfigurement it occasions, the ivory-like elasticity and induration of the affected parts, and the rarity of ulcerative degeneration. As distinguished from syphilis, it is known to be unaffected by specific medication. Since rhinoscleroma, however, has been by some writers assumed to be a form of syphilis, it is needful to distinguish clearly between the two. But as in the former affection there is rarely softening of the ivory-like induration, much less ulceration, which is common in syphilitic gummata, the distinction is tolerably clear. From the variety of acne rosacea of the nose known as rhinophyma, rhinoscleroma is readily differentiated by the softness and compressibility of the acneiform affection and its evident vascular and glandular composition.

The ulcerations of epithelioma have a more circular outline, a more elevated edge, and occur in persons of a more advanced age. Keloid, if found in the situation of rhinoscleroma, does not ulcerate.

Treatment.—The method of relief thus far employed is a total or partial extirpation of the neoplasm. Kaposi speaks of dilatation of the nares, where there is actual or threatened nasal occlusion, by means of laminaria and compressed sponge. Both excision by the knife and destruction by caustics have been found to secure merely temporary benefit, as the growth is reproduced with rapidity.

¹ Brit. Med. Jour., October 24, 1885.

Prognosis.—The future of the patient is grave. The disease not only persists and recurs after operative interference, but may endanger life by obstruction of the nostrils. Zeissl's case proved fatal ten years after the disease first appeared.

TUBERCULOSIS CUTIS.

Tuberculosis is one of the most common, formidable, and destructive of the great scourges of the human family. It may attack either primarily or secondarily any organ or tissue of the body. The skin is not rarely the seat of its ravages, and when extensively involved the results are in the highest degree disfiguring and repulsive.

The consequences of tuberculous invasion of the skin are usually declared early in life, because in those periods the skin is most easily invaded, and also because at these ages the habits and environments of the individual are conducive to the occurrence of the accident. Tuberculosis of the skin may be the result of general infection in the body; or may, on the other hand, be the starting-point of such infection. In either event the disease is always originally acquired by infection and not by inheritance. Children are rarely, if ever, born tuberculous. The coincidence of several members of one family exhibiting evidences of the disease is most readily explicable by the opportunities for infective accidents furnished in such families.

In the pages which follow no attempt is made to revert to the remarkable and instructive history of the gradual acquisitions of science on the subject of this disease. Neither within these limits is it desirable to indicate the several conditions which in their relations to this subject have been confused in the past, and the names of which have served as titles for chapters on cutaneous disorders. It will be sufficient if the results obtained from the vast and valuable labors of the pathologists and clinicians of the last decade be concisely set forth with a view to the simplest systematic conception of the subject.¹

Symptoms.—Tuberculosis of the skin is conveniently studied in its several forms of (1) lupus vulgaris; (2) tuberculosis verrucosa; (3) tuberculosis cutis orificialis; (4) scrofuloderma.

1. LUPUS VULGARIS.

(Lat. *lupus*, a wolf.)

The symptoms of lupus vulgaris are both numerous and diverse, a fact which may account for the many names which have been applied to its different manifestations, and which with few exceptions are descriptive merely of certain external features.

The lupous infiltrate may be limited to small areas or diffused over an entire region of the body. It may be first apparent in pinhead- to bean-sized flattened maculations (LUPUS MACULOSUS, LUPUS PLA-

¹ In the preparation of this chapter valuable aid has been rendered by the symposium on the subject prepared at the request of the Council of the American Dermatological Association, by James C. White, of Boston; John T. Bowen, of Boston; and George Henry Fox, of New York. Boston, 1892.

PLATE XX.



Lupus Hypertrophicus of the Face.

NUS), from which may be later developed papules, tubercles, or nodules of equal or somewhat greater size, rising above the general level of the skin and often perceptible within its mass by palpation (LUPUS NODOSUS; LUPUS TUBERCULATUS, ELEVATUS, TUMIDUS, NON-EXEDENS, NON-ULCEROSUS).

As in syphilis in the course of which, though almost every one of the elementary lesions of the skin may be developed, there is a distinct predominance of the papule and tubercle, so in lupus vulgaris the type of the disorder is shown in the lupous nodule, the "lupoma," as it is by some authors designated.

This dull-reddish, purplish-shaded lesion, scarcely as large as half a pea, may be the predominant symptom of a lupous patch for a period of from ten to twenty years and even more. It is of a softish, almost boggy consistency, yielding when pressed upon firmly with a blunt-pointed probe and readily penetrated by a sharper instrument. The English compare its contents with apple-jelly.

The changes within, about, and beneath these lesions furnish practically the clinical pictures of lupus vulgaris. Thus there may be extensive oedema, thickening, hypertrophy, hyperplasia (*bouffissure*), pachydermia, even telangiectasis, and an accompanying lymphangitis or lymphadenitis (LUPUS HYPERTROPHICUS, PAPILLOSUS, CEDEMATOSUS, ELEPHANTIASIS, TUMIDUS, EXUBERANS, etc.). In many of these cases the prominent symptom which has suggested these names to the older writers is in fact a simple inflammatory swelling, due only indirectly to the lupoid involvement of the skin, a fact which can be recognized after any efficient treatment of an extensive plaque of lupus of the face, the subsidence of the swelling being one of the most conspicuous of the immediate results of the treatment.

Involution of the lupoma, or of tissue infiltrated with lupoid cells, occurs by resorption of that material, by fibroid metamorphosis, and by ulceration. These several changes separately or together furnish other clinical pictures of the disease. Thus the lupus-lesion or patch may furnish scales, whitish, dirty, yellowish brown, or even glistening, the epidermis above and about becoming wrinkled. This process may be central or peripheral as respects patch or lesion, leaving eventually a cicatriform depression in the skin (LUPUS EXFOLIATIVUS, LUPUS PSORIASIFORME, "LUPUS-PSORIASIS"). When a fibrous metamorphosis occurs a sclerotic mass occupies the site of the former lupoid tissue, which in some cases progresses to extension of the lupoid patch in consequence of the further production of the toxin of the bacilli in the site affected; and in others produces cicatriform tissue resembling that left after involution without ulceration of the gumma of syphilis (LUPUS SCLEROSUS, SCLÉREUX, FIBROSUS).

In the degenerating forms of lupus, ulceration may begin by breaking down the epidermis over the lupous tissue or by a more or less rapid transformation of patch or lesions into a cheesy semi-purulent mass of detritus. When pus is freely formed, whether superficially or deeply, crusting ensues, the debris of epidermis being entangled with the desiccated secretions. These crusts are variously colored, and differ in thickness with the severity of the degenerating process

beneath. The oval or circular ulcers which furnish them are usually well defined, though irregular as to the margin, shallow, thin-edged, and flattish; and their floors are dirty reddish or purplish, indolently granulating, furrowed, hemorrhagic, or, when cicatrization is in progress, healthy. The destruction produced by involution of a lupous patch may be both by resorption and ulceration in the same subject and at the same time. The two processes may also coincide with an outbreak of fresh lupous tubercles, which later may develop at one point or another of the patch undergoing involution, probably from emigration of bacilli at the point of advance. In other cases lupus may spread by the formation of fresh nodules and plaques separated by islets of sound skin from those previously degenerated. When the ulceration advances it may be superficial, deep, or have other peculiarities, and be subject to other accidents of the ordinary process of ulceration, whence the names LUPUS SERPIGINOSUS, PROFUNDUS, SUPERFICIALIS, GANGRÆNOSUS, EXULCERANS, RODENS, etc. LUPUS CRUSTOSUS and RUPOIDES are terms descriptive merely of the incrustations which form in some cases. Exuberant granulations elevating the floor of the ulcer may produce the condition termed LUPUS FUNGOSUS, LUPUS FUNGOIDES, LUPUS VEGETANS. LUPUS KELOIDES indicates a cicatricial overgrowth of the scar-tissue left after any one of the several conditions described above.

One of the most conspicuous features of lupus vulgaris is its essentially chronic course. It requires far more time for its complete evolution than either syphilis or carcinoma; and in this point is best compared with lepra. For a quarter of a century a lupus-patch may be limited to a space no larger than the palm of the hand, and exhibit some evidence of activity during the greater part of that period.

LUPUS OF THE FACE.—Here the first manifestation is the so-called primary efflorescence, exhibited on one or both cheeks, nose, or cheek and nose, as a dull-colored maculation or minute nodule, often long unnoticed, or as a finger-nail-sized, purplish thickening of the skin. Extension may then occur by multiplication of the lesions, or by spreading of the single patch, the central parts wasting or cicatrizing. The contracture of the irregular scars thus resulting may produce an ectropion of the lid or lip, and with this is often seen the “bouffissure” of the features already described. Crusting and ulceration may be conspicuous or well-nigh absent features. Gradually the subcutaneous tissues become involved.

The nose, after absorption of the lupous tissue, may become shrunken and retracted to a miniature of its former dimensions, its tip being noticeably reduced to a sharp point, producing thus a characteristic deformity suggesting the beak of a parrot. In other cases the point becomes bulbous, flattened, livid, and knobbed, with a thickened septum and distorted alæ, an isolated patch or two of lupous infiltration showing in the neighborhood of the cheek on one or both sides. The last described condition may lead by degenerative processes to the first, but is more commonly noticed as a less severe and more localized involvement of the face, which may terminate, in favorable cases, without the severe mutilation first described.

The subcutaneous tissue, mucous membrane, cartilages, and bones may be destroyed ; and in place of the nasal organ itself there may be left eventually two ovoid cavities in the face, separated merely by the posterior flange of the septum.

Often large portions of the skin of the head (cheeks, lips, nose, eyelids, chin, ears, brow, and neck) become altered by the lupous growth. The resulting thickening produces a marked and characteristic deformity, reducing the openings of the mouth and lids to narrow slits, interfering with vision, speech, and mastication, and producing a marasmus from these causes alone, before there is ulceration at any point.

The ravages of the disease are at times frightful in severity ; not merely in consequence of the destructive ulceration to which it tends, but from the deformity left by awkward attempts at repair. The entire surface of the head may be thus converted into a hideous travesty of humanity, while yet its possessor is left with all vital organs and functions apparently unimpaired.

The upper lip, when involved, becomes first swollen, fissured, hemorrhagic, and crusted : and a granulating surface indicates extension of the disease to the adjacent mucous surface. Later, if the ulcer heal, the mouth, by contracture, is reduced to a repulsive-looking slit or chasm in the face, permanently retracted, and either open or closed. The gums, lining membrane of the lips, velum, and hard palate may also be granulating, eroded, or whitish, when the exfoliated epithelium is *in situ*. Ulceration and cicatrization here also produce deformities interfering with the function of the parts, aphonia, for example, resulting from the operation of these causes in the larynx.

LUPUS OF THE EARS may be symmetrical in development, or affect but one auricle. As in eczema, a favorite point of election is the lobule, which, with or without tumefaction of the whole organ, becomes a pyriform, purplish, dependent tumor, agglutinated speedily to the cheek. Later, when ulceration occurs, the auricle may disappear or be reduced to a shrunken shell of its former state, the external auditory meatus being, by the same process, occluded.

LUPUS OF THE TRUNK is, as a rule, more extensive and less destructive than lupus of other parts. Giant areas over the loins, hips, and belly may be involved in superficial, serpiginous ulceration, the centre healing as the peripheral ring spreads. In these cases it is even more difficult than in others to insure cicatrization.

LUPUS OF THE GENITAL REGION may occur in both sexes, and then, as a rule, has extended thither from affected areas of the adjacent integument. It is one of the rarest of the locations involved.

LUPUS OF THE EXTREMITIES is remarkable for its interference with the mobility of the smaller bones of the hands and feet, as a result of rigid cicatrices, and also for the production of caries and osseous necrosis. Mutilating effects are thus produced by loss of phalanges, and also by shortening of the hand or foot after the destruction of bone. Elephantiasic enlargement of such organs as the hands and feet thus corresponds to the livid tumefaction seen occasionally in the face. Thickenings, ridges, knobs, nodules, warty excrescences, ulcers, crusts, and callosities are often commingled, and in patients of mature years

strongly resemble some forms of vegetating and ulcerating epithelioma.

LUPUS OF THE MUCOUS MEMBRANES may or may not mean extension of the disease from an affected adjacent integument. The lupous nodule, in consequence of warmth and moisture, is here transformed into a moist papillary outgrowth, or externally granulating patch which may ulcerate and cicatrize. The borders of such an affected area are well defined, and its surface is reddish and florid, quite pallid, white and glistening, or of a dirty grayish-white color where the investing epithelium is loosened but not yet detached.

The soft is more often involved than the hard palate, but these parts with the tongue, larynx (epiglottis, interarytenoid fold), and gums may be extensively invaded. Often for from two to five years the disorder may make no apparent advance, being limited to patches of red, swollen, coarsely granulating, whitish or glistening mucous membrane, with ulcerating and cicatricial processes slowly resulting. The lymphatic glands beneath the jaw and in the subclavian region may be simultaneously enlarged. In connection with the characteristic lupoid nodules grayish growths of the character of small tumors may be recognized in the larynx, with the result of partial occlusion of the rima glottidis. Patients may suffer from apical pulmonary tuberculosis, presumed to be the result of extension of the disease from laryngeal lupus.

FIG. 67.



Lupus vulgaris of the leg.

“**LUPUS DÉMISCLÉREUX DE LA LANGUE.**”—Leloir¹ pictures and describes the features in the case of a girl fifteen years of age, with lymphatic adenopathy, typical lupoid nodules about the nose, and characteristic “parrot’s beak deformity” of the latter. The middle of the dorsal surface of the tongue displayed smooth, pea-sized and larger sclerotic nodules, grayish yellow, firm and softish, separated by furrows, and non-ulcerative. The palate, uvula, and larynx were involved. Tubercle-bacilli were recognized and cultivated in series, and inoculation of the cultures produced tuberculosis in guinea-pigs and a rabbit.

ESTHIOMÈNE (so-called “Lupus of the External Genital Organs of Women”).—In the year 1849 Huguier published a report of cases

¹ Internat. Atlas of Rare Skin-diseases, 1889.

under the title of *esthiomène*, which have been the basis of a conception widely prevalent since that date, that lupus of the vulva presents certain peculiarities not displayed by the same disease elsewhere. The subject has been restudied with special care by several observers, including one of us, and by Taylor, of New York. Lupus is among the exceedingly rare affections of the external genitalia of women, and where existing does not in any special way differ from its manifestations in other regions of the body. The "*esthiomène*" of Huguier and his followers is a complexus of differing disorders, including cases of syphilitic sclerosis, secondary lesions, and gummata; and hypertrophies of the genital organs due to chronic "*chancroid*," traumatisms, and inflammations of a simple character aggravated by filth. It is not known to be a tuberculosis of the vulva, though it is possible that some tubercloses may have been included in the category.

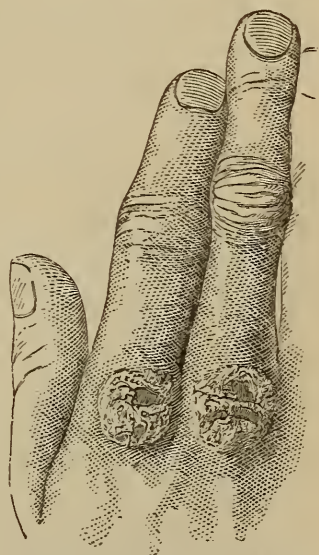
2. TUBERCULOSIS CUTIS VERRUCOSA.

There are several forms of tuberculosis of the skin in which lesions, differing both in appearance and career from those described in connection with lupus vulgaris, have been demonstrated to be the result of the encroachment of bacilli of tuberculosis or their toxins upon the integument. The lesions exhibit for the most part a verrucous or warty appearance, and are well illustrated in the most distinctive clinical member of the group, the anatomical tubercle. In 1884 bacilli were first discovered in its mass, and in the year 1886 Riehl and Paltauf pointed out the connection of this lesion with cutaneous tuberculosis.

(A) **Verruca Necrogenica** (POST-MORTEM TUBERCLE, DISSECTION-TUBERCLE, ANATOMICAL TUBERCLE).—*Verruca necrogenica* is a vesiculo-pustular or wart-like symptom of cutaneous tuberculosis, situated usually on the hands, and resulting, for the most part, from contact with the bodies of the dead.

This lesion was first named *verruca necrogenica* by Wilks.¹ It occurs on the fingers (especially on the dorsum of the thumb and of the index) of those engaged in the habitual handling or dissection of cadavers, and results from such professional contacts, from dissection-wounds, and from all accidental inoculations with tuberculous virus. Cases are reported in which the lesion has had a non-cadaveric origin. It begins at the site of an abrasion or wound as a vesico-pustule, with deep-seated base and reddish or reddish-purple areola. This is productive of a burning, smarting, or pruritic sensation. The lesion accomplishes a period of bursting and crusting, which may be followed by complete involution. Several isolated or grouped papules, nodules, or tubercles may be formed, one or a patch of several being subsequently covered with villosities or undergoing

FIG. 68.



Verruca necrogenica. Model, Guy's Mus. 19350.

¹ Guy's Hospital Reports, third series, vol. viii., p. 263.

atrophic changes over an area several inches in diameter. Dermatitis and suppuration, very rarely ulceration, may complicate the process, though at times the first symptom of infection is an ulcer forming at the site of a cicatrix. The typical so-called "anatomical tubercle" is indurated and horny. A pigmented verrucous papule or tubercle very slowly forms, which may become fissured at one or more points. The characteristic lesion is the thickened, indolent, more or less pigmented and fissured, split-pea- to bean-sized wart, usually single, found on the finger of the anatomist. This may persist as an apparently innocuous lesion for months or years, or suddenly assume a formidable aspect.

In other cases grave symptoms result, either in the involvement of the deeper tissues (subcutaneous, thecal, tendinous, periosteal), or in the production of erysipelas, pyæmia, septicæmia, or gangrene. Surgeons divide these cases into mild and acute varieties, according to the symptoms exhibited. The records of the medical profession in almost every one of the large cities of every country contain the names of one or more eminent men whose lives have been sacrificed in this manner. In a few instances the local process has been followed by generalized tuberculosis.

(B) **Tuberculosis Verrucosa Cutis** (Riehl and Paltauf) (**LUPUS SCLE-ROSUS**, **LUPUS VERRUCOSUS**, **SCROFULODERMA VERRUCOSUM**; *Fr.*, **LUPUS PAPILLAIRE VERUQUEUX**; **LUPUS SCLÉREUX**).—The lesions of this form of cutaneous tuberculosis occur often on the flexor aspect of the lower forearm, but also in other regions of the body, such as the integument covering the inner malleolus and the backs of the hands. The plaques are insensitive, brownish red, movable, small-coin- to palm-sized, single or multiple, distinctly circumscribed, ovid or scalloped in outline, and usually covered with minute pustules, fine pointed vegetations, and thin crusts. A characteristic violaceous halo commonly surrounds the whole. When healing occurs a smooth and scaling scar results. In those cases the papillary layer of the skin is chiefly involved.

In the papillary layer of the corium the inflammation results in the production of numerous minute abscesses. Caseating nodules containing tubercle-bacilli, giant-cells, and epithelioid cells are commingled with the abscesses. In some cases tubercle-bacilli are numerous; in others their detection is difficult if not impossible, as in *verruca necrogenica*.

The disease is to be most carefully distinguished from cutaneous blastomycosis, the lesions of which it closely resembles. Here a histological examination is essential.

The disorder is said to be especially frequent of occurrence in those handling the dead or living bodies of animals.

(C) **Other Verrucous Tuberculoses**.—An interesting series of morbid phenomena is presented when, for special reasons (proximity of tuberculosis of organs other than the skin, accidents of position and exposure, influences that escape detection), sites of tuberculous infection, whether primary or secondary in order, exhibit peculiar special symptoms:

TUBERCULOSIS PAPILLOMATOSA CUTIS (Morrow's type) is by some

authors assigned to verrucous tuberculosis (B). In these cases exuberant, soft, and florid excrescences rise to the height of one or two centimetres above the general level, closely packed together, with individual elements separated by deep fissures, the whole bathed in a puriform mucus concreting in dark crusts.

FIBROMATOSIS TUBERCULOSA CUTIS (Riehl).—In these cases there is not merely a papillomatous, but often a sclerotic growth found on the lips, nose, cheek, or about the anus or other mucous outlets of the body, interspersed with verrucous lesions, vegetations, and small shallow ulcers. The tuberculous masses may be in the form of tumor-like bodies or thickenings of the subcutaneous tissue.

ELEPHANTIASIS TUBERCULOSA CUTIS is a term applied to gigantic overgrowths of the integument complicated by lymphatic occlusion. In these cases there has usually been a blocking up of the lymph-channels by an infarction produced by leucocytes charged with tubercle-bacilli.

TUBERCULOSIS FUNGOSA CUTIS (Riehl).—In this class of cases tumors form resembling those occurring in mycosis fungoides, secondarily infected with tubercle-bacilli from other and usually adjacent organs (bone, muscle, etc.), the reddish-brown nodules first formed increasing to the size of a hen's egg. These may surmount large areas of infiltration and ulceration. Beside the tumors, minute pustules, vegetations, and crusts may be seen. Eventually typical tuberculous ulcers form.

It is chiefly important to note in this connection that accidental inoculations with tuberculous material produce in different cases different clinical results, the essential part of the process being the transference of tubercle-bacilli. These infections are far more common than is generally understood. They occur in both the young and the old. Fox, of London, has reported such instances at the ages of seventy-two and eighty-two, respectively; and Marmaduke Shield has seen cases of general tuberculosis of the aged, resulting from these accidents.

3. TUBERCULOSIS CUTIS ORIFICALIS.

The clinical forms included under this title are those once supposed to be the sole manifestations of cutaneous tuberculosis. The title "tuberculosis of the skin" was, in fact, applied exclusively by many writers to the lesions observed by Kaposi, Järisch, Chiari,¹ and others. These were indolent, oval or circular, shallow, discrete, reddish-yellow, granulating ulcers, often covered with thin crusts, occurring about the mucous orifices of patients affected with pulmonary tuberculosis (lips, anus, and vulva) and with development of miliary tubercles in the adjacent mucous tract. Tuberculous lesions of ulcerative type on the alæ of the nose, over the lips, and about the ears, have been recognized in association with laryngeal, palatal, oral, pulmonary, and intestinal tuberculosis.

In the case of a patient in advanced pulmonary tuberculosis, lately seen by us, there was a tuberculous ulcer near the anus, and also a

¹ Vierteljahr. f. Derm. u. Syph., 1879.

well-defined patch of infiltration in near proximity, highly suggestive of some of the forms of lupus.

ACUTE TUBERCULOSIS OF THE SKIN in children has been described under different titles (*dermatitis tuberculosa acuta*, *tuberculose pseudo-ulcéreuse*) by Heller and Gaucher. In these cases macules, vesicles, bullæ, papules, and pustules, terminating in deep, crusted, circinate ulcers, accompanied by caseation of neighboring glands, were found to contain bacilli; and inoculations of cultures resulted in distinct tuberculous infection. These cases scarcely justify their separate classification. They are properly placed with the clinical forms of disease termed, for provisional purposes, *scrofulosis* of the skin.

EXANTHEMATIC MILIARY TUBERCULOSIS OF THE SKIN may follow the exanthematous fevers in children. The lesions are multiple, indolent, dull brownish-red tubercles, acuminate, situated in or near the cutaneous follicles and suggesting the lesions of *acne papulosa*. When in process of degeneration they form rounded, circular, or polygonal, sharply cut ulcers having a violaceous border, an irregular, granular floor, and a scanty sero-purulent discharge. Miliary nodules are to be seen both on the floor of the ulcerative surface and in the periphery of the lesion. They contain tubercle-bacilli.

This disorder occurs, as a rule, in those exhibiting other and unmistakable symptoms of tuberculosis. If the lesions be solely cutaneous, healing may result.

4. SCROFULODERMA.

(Lat. *scrofa*, a sow.)

The term *Scrofula*, or *Struma*, has been long and loosely applied in general medicine for the purpose of designating a number of diseases the real significance of which was unknown, their points of resemblance being greatly outnumbered by their specific differences. The researches of the last twenty years have been steadily and continuously restricting this list in almost every department of medicine. Many of the disorders once supposed to be scrofulous are now known to be syphilitic. In orthopædic surgery a number of joint-affections once believed to be incontestably of strumous origin are known to be producible by traumatism exclusively. And in dermatology no less a broad advance has been made since the day when eczema, psoriasis, and acne were described as evidences of *scrofula*.

The term *scrofuloderm* in these pages is strictly limited to those cutaneous changes which occur in distinctly scrofulous subjects, and which are the result of tuberculous infection at one point or another of the body. By the term *scrofula* Billroth recognized a condition in which there occurs at any point in the body where irritation has been induced an indolent inflammation which persists after such irritation has ceased, which frequently terminates in suppuration and caseation, and which subsequently rarely pursues a hyperplastic career. If with this be conjoined inflammation and caseous infiltration of the lymphatic ganglia, or of the subcutaneous connective tissue; amyloid degeneration of one or several of the viscera; tumefaction of the belly; chronic keratitis,

ophthalmia, otorrhœa, or coryza; a chronic arthritis (white swelling); a pasty, dirty-colored, and thick, or delicate and transparent skin exhibiting cicatrices of old abscesses or ulcers, and a voluminous nose overlooking thick everted lips, the general picture of the scrofulous patient may be considered complete. The recognition by Robert Koch of the etiological importance of the bacillus tuberculosis in tuberculous disease, and the demonstration of the presence of these micro-organisms in a number of lesions heretofore regarded as "scrofulous," have established their scientific position beyond controversy. The word "scrofuloderm" should be hereafter limited in its application to lesions of the skin and subcutaneous tissue occurring in the subjects of tuberculosis, and due to the presence in such lesions either of tubercle-bacilli or of their toxins, or due to a cachexia induced by tuberculous infection of some other body-organ. With the advance of knowledge on this subject the fact has been recognized that the toxins of tuberculosis may be responsible for a series of lesions and symptoms in which tubercle-bacilli cannot be demonstrated. In this way has been established a class of disorders to which Johnston has given the appropriate title of the "Paratubercloses," and in which he has inscribed the scrofulodermata.

The scrofulodermata are characterized by the occurrence of pathological processes in the skin, lymph-glands, or periglandular tissues, which betray evidence of the scrofulous process. They usually begin as firm, well-defined subcutaneous nodules, similar in type to the syphilitic gumma, which gradually enlarge, become attached to the skin, subsequently degenerate, exhibit characteristic ulcers, and usually terminate by no less characteristic cicatrices ("Gommes Scrofuleuses," "Gommes Scrofulo-tuberculeuses," "Scrofuloma," Cold Abscess of the Skin). Pathologically they are all pyodermias, the product of acute inflammatory processes, and not of the type of the granuloma.

The typical scrofuloderm is encountered about the face and neck, where the lymphatic glands have long been tumid and are either dense or doughy to the touch. This condition is usually reached very slowly; often months and years are required for its production. The glands may be as small as almonds or as large as the closed fist. Gradually a scrofulous dermatitis ensues in the skin which is superimposed. It becomes purplish and thinned and finally yields, giving exit to a sero-purulent fluid mingled with caseous matter and blood. The pus-corpuscles of this fluid examined under the microscope are seen to be poor in protoplasm. Fistulous tracts and sinuses result, which undermine and perforate the skin, resulting in the production of a chronic discharge and characteristic ulcers. The latter are far more remarkable for their borders and bases than for their floors. They are usually linear, occasionally elongated and oval, almost never circular. As a result, their uneven floors, covered with pallid granulations and a watery pus, are often hidden beneath their inverted, tumid, and uncolored edges; or the latter may be thinned, stretched over a fistulous pocket, and reddish or purplish in color. Their bases are usually deeply attached to the subcutaneous tissue, and are firm or soft, never densely indurated. The resulting crusts are thin, tenacious, reddish

or brownish, and, like the ulcer, often linear, rarely bulky, never rupioid. The resulting cicatrices are corded, depressed in irregular lines or bands, and often alternate with equally irregular nodules (scrofulous gummata) where the degenerative process either has been arrested or is still in activity.

Rarely, enormous ulcers originate in the manner described above, which dissect out vast areas of subcutaneous and intramuscular tissue in the neck and even the extremities, in the course of which cartilage, bone, and periosteum are melted away. Usually but a few of these points of degeneration, from two to six, are exhibited in one patient.

Another type of scrofulous gumma of the skin begins as a subcutaneous nodule on the back or over the extremities of scrofulous children, the career of which is practically that outlined above. It differs chiefly from the lesion more or less directly connected with the lymphatic glands, by reason of its relation with lymphatic vessels distributed to a deeper and possibly distant tuberculous focus.

According to Unna, there is a "dry" form which originates in the action of tuberculous toxin in the granuloma; and a "wet" form, the product of reaction of the nutrient channels and the resulting œdema. Tubercle-bacilli have been recognized in a few cases only, but their toxins have given rise to the pathological changes.

TUBERCULOUS DACTYLITIS, observed generally in children, is characterized by bulbous extremities of the fingers and toes, the skin covering the same being at times the seat of infiltration and thickening. White¹ believes this process to be more common than that occurring in dactylitis syphilitica.

SUPPURATIVE TUBERCULAR LYMPHANGIECTASIS (Hallopeau and Goupil) is a condition in which scrofulo-tuberculous gummata, in small-nut- to egg-sized tumors, form along the lymph-vessels, of the lower extremity particularly. When such a tumor breaks down it furnishes the typical picture of the scrofulous ulcer, with its cheesy and watery pus, its thin edge, and its indolent career. In these rare cases bacilli have been recognized in the secretion.

TUBERCULOSIS CUTIS SERPIGINOSA ULCERATIVA is a term relating to a rare group of lesions in which brownish-red nodules, pea- to bean-sized, degenerate in the course of weeks or months until there results a centrifugally spreading, ovoid or roundish, even horseshoe-shaped ulcer, grayish yellow in hue and overspread with smaller cicatrices. Instead of nodules, the first lesions may be circumscribed areas of infiltration. The involved surface may be extensive, even larger than the two palms, and may coexist with secondary foci of involvement. Visceral and pulmonary tuberculosis may result. The resemblance of the large spreading patches to a serpiginous syphiloderm is striking.

LYMPHANGITIS TUBERCULOSA CUTANEA (Besnier, Lejars).—The lymphatic vessels of the skin may be either primarily or secondarily

¹ Loc. cit.

invaded with tubercle-bacilli, and in either event linear lesions form corresponding to the lymphatic trunks, or there develop tuberculous nodules or warts, dermic or subcutaneous in situation, which eventually ulcerate and discharge pus, blood, or lymph. At times a reticular network results, with fistulous sinuses. Several of the lymphangiectases have been demonstrated to be tuberculous in character.

Etiology of Tuberculosis Cutis.—Accidental inoculation of tuberculosis may occur at all ages and in all sexes, the infective material gaining access to the economy in the large number of instances by the medium of the lymphatics. There is, however, ampler opportunity for such transmission among the members of any family in which pulmonary tuberculosis exists; hence the widespread belief in the heredity of the disease. Attention has, however, been already directed in these pages to the striking fact that children are rarely born into the world tuberculous; and to the possibility that all cases of reputed inherited tuberculosis were acquired by direct infection.

Given, however, an infective micro-organism, the soil upon which it may flourish most favorably is of paramount interest in an etiological view. The young, the delicate, the cachectic furnish such a culture-field. With these must be included, as favoring such accidents, the mode of life of the very poor, the filthy, and the degraded. Thus, lupus vulgaris is originally developed in the majority of all cases during the first decade, between the third and sixth years of life; rarely after the thirtieth year, for the reasons above given. The significant fact in this connection is that at this period of life the child often deprived of the constant care of the mother by the demands made by a still younger infant, untaught in the simplest rules of cleanliness, picking and scratching the face after miscellaneous contacts of the fingers with all sorts of material, is exceedingly liable to inoculate the skin of the face with tuberculous virus, if there be victims of such disease occupying the same apartment or house. It is significantly first upon the face in these early years, and next over parts such as the extremities or the genital region, to which the exposed hands have been carried, that the early symptoms of lupus vulgaris are betrayed. Further, it is noteworthy that well-marked cases are more frequent among the poor, the filthy, and the degraded than among the comfortable and cleanly. The prevalence of the disease in public as contrasted with private practice is conspicuous in all statistics.

As throwing additional light upon the question of childhood-infection, it is to be noted that other forms of tuberculosis occur at any period of life and in both sexes, when the accident of infection operates. Besnier, for example, reports a case of lupus resulting from tuberculous infection in vaccination; Fournier, an instance in which a young woman was infected during the piercing of the ear for the insertion of earrings; Jadassohn, a case in which the tuberculous virus was inserted by tattooing; and Strauss, the history of a student who was wounded by a rapier in a duel, and as a result developed lupus in the site of the wound. In verruca necrogenica and warty growths of the same nature it is contact with the bodies of the dead or with tuberculous matter in any

form that determines the result. The aged with tuberculous lesions upon the backs of the hands, middle-aged persons with other evidences of cutaneous affection, actually suffer from generalized tuberculosis as a result of the accident.

What may be said of the causes of lupus vulgaris relates also to scrofuloderma, which, while occurring in both sexes and at all ages, is more frequent in early life because of the susceptibility of the tissues at those periods. The difference between the manifestations of scrofuloderma and those of other clinical forms of tuberculosis depends in large part upon the attenuation of the virus, seeing that relatively fewer tubercle-bacilli are to be recognized in the characteristic lesions of scrofula; and the results of inoculations of cultures as respects the lower animals are markedly different.

The soil fittest for scrofulodermatous manifestation is that where well-known agents have been most efficiently at work. All causes which tend to impair the nutrition and vigor of the body are, to an extent at least, efficient in its development, including privation from sunlight, fresh air, wholesome food, exercise, and hygienic influences in general. It is common among prisoners, exiles, and, in this country, among negroes and those of mixed blood. Consanguineous marriages are said to result often in strumous offspring. Syphilis in the third and fourth generations is known to be pathologically distinct from all the manifestations of scrofula. In many cases scrofuloderma is the sequence of other depressing medical diseases and surgical accidents. In certain instances, especially where it is limited to the neck, and accompanied merely by a cervical or submaxillary adenopathy, scrofulosis is consistent with full vigor and nutrition of the body and all other evidences of sound health.

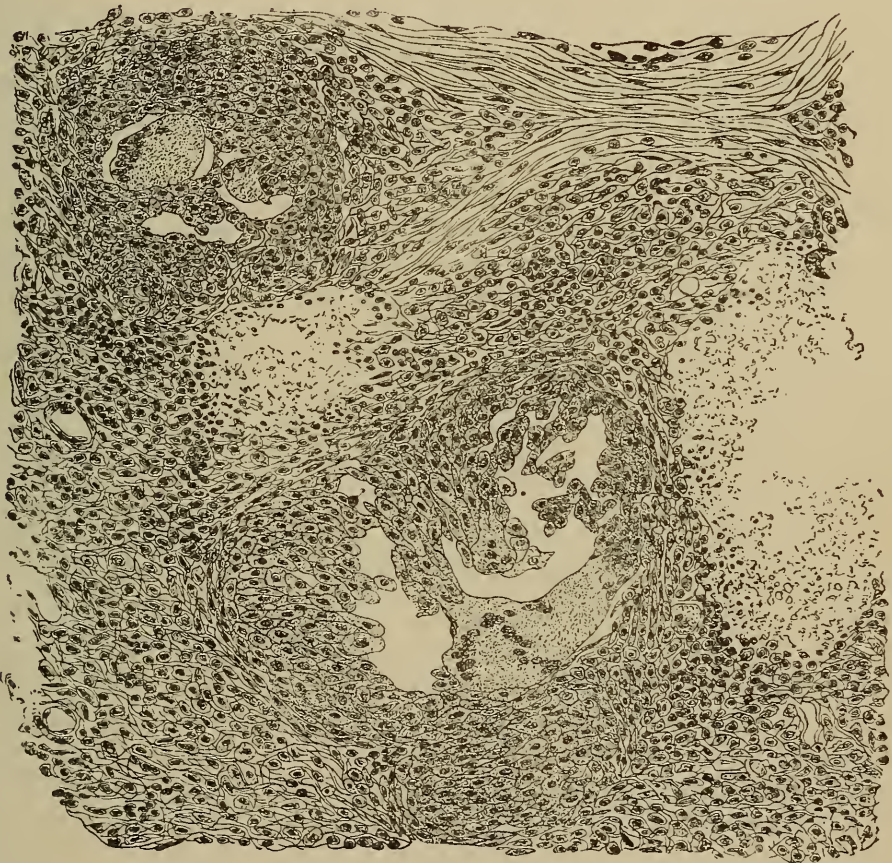
Pathology of Tuberculosis Cutis.—Lupus vulgaris, tuberculosis cutis verrucosa, and scrofuloderma, as well as tuberculosis cutis orificialis (the one form hitherto recognized as tuberculous) are due to infection with tubercle-bacilli, and are practically identical histologically with tuberculous lesions in other organs of the body. The discovery of bacilli in lupous tissue, first made by Koch, has since been verified by Doutrelepon, Weichselbaum, Meisels, Schuller, Lustig, and others. The striking resemblance first shown by Virchow between a caseous miliary tubercle and a lupous nodule had, even before Koch's discovery, pointed to an identity of origin. The result of inoculation of culture-fluids has given positive results. Lenz, Hüter, Schuller, ourselves, and others have produced tuberculosis by introducing in rabbits granulations taken from lupous, scrofulous, and other infected patients.

For a knowledge of the microscopic characters of cutaneous tuberculosis we are largely indebted to the Germans, whose opportunities for the study of the disease are unequalled. Virchow, Auspitz, Billroth, Lang, Kaposi, Klebs, Stilling, and Thin have amply contributed to the subject.

The essential lesion in all forms of cutaneous tuberculosis is the nodule of so-called granulation-tissue, containing small round cells deeply stained by coloring-agents; large cells, epithelioid in type, which

contain one or more large clear nuclei; and giant-cells having a homogeneous centre and few or many large vesicular nuclei situated for the most part along the border of the cell. Around and between these cellular elements is woven a network of connective-tissue bundles. In its early stages the nodule is about the size of a millet-seed, is grayish or reddish yellow in color and translucent, is situated wholly within the corium, is well defined in outline, and is well supplied with vessels. After a shorter or longer period, depending upon the activity of the process, the nodule undergoes changes. Although there is marked proliferation of the endothelium of the vessels, no new vessels

FIG. 69.

Section of lupus of face. $\times 750$ and reduced. (DELAFIELD and PRUDDEN.)

are formed, the old ones become obliterated, and there results a necrosis—known as a coagulation-necrosis, or cheesy degeneration—of both cells and intercellular substance. In this condition the protoplasm is seen as a granular or amorphous mass, while the nuclei stain but feebly, if at all. Extension of the disease from the primary nodule may occur in the form of other circumscribed nodules, or as a diffuse infiltration of the tissues with the cell-forms above described, the small round cells being greatly in excess of the others.

The process begins in the corium and extends to the epidermis and to the subcutaneous tissues, these adjacent structures being variously affected in the different forms of cutaneous tuberculosis. The epidermis

may be hypertrophied, exfoliating, or broken through by the tubercular infiltration, producing a typical ulcer. The nodules may soften and break down into a semifluid mass, and suppuration—always the result of secondary infection—frequently occurs.

Tubercle-bacilli have been recognized in all parts of the nodule, both within and without the cells, but are usually most readily found in the giant-cells and in the outer portion of the nodule. Since giant-cells and nodules of granulation-tissue are found also in other than tuberculous processes, the only pathogenic feature of the tubercle-structure is the presence of the tubercle-bacillus, though the coexistence of a large number of giant-cells and nodules or groups of epithelial cells leaves little doubt as to the diagnosis.

In LUPUS VULGARIS are found the characteristics of the chronic and slowly developing forms of tuberculosis. Giant-cells are numerous, the infiltration of round cells is marked, but epithelioid cells are present in comparatively small numbers, while the bacilli are very scarce; many sections of tissue may be examined before finding a single bacillus. In lupus, more than in other forms of cutaneous tuberculosis, the proliferation of cells leads to a constructive or regenerative process as a result of which the lupus-nodule may be replaced by scar-tissue, or there may be an excessive formation of new connective tissue, producing the various degrees of elephantiasis so often seen in lupus. This intermingling of new tubercular foci of infiltration with hyperplasia of connective tissue is what produces the many clinical forms of the disease. When the process is extending, the new growth, spreading along the vascular elements of the derma, involves finally the rete and the panniculus adiposus. The nest-like agglomerations disappear; there is in their stead an irregularly diffuse infiltration, producing subsequently hypertrophic, atrophic, desquamative, suppurative, or ulcerative sequels. Finally, the glands of the skin may become involved, the hairs falling from their follicles, the sebaceous glands either becoming obliterated or having their acini stuffed with epidermal masses which distend them in milium-like bodies grouped about a cicatricial pedicle.

The epithelium is secondarily involved in lupus and may be desquamating, atrophied, or ulcerated. Not infrequently there is marked proliferation of the epithelial cells with down-growth of the interpapillary processes. True epithelioma may thus result, in which event its course is usually rapid and destructive. There may be also a proliferation of the glandular elements of the skin. Leloir describes, as of rare occurrence, a colloid and a mucoid degeneration of the lupous tissue.

In the VERRUCOUS forms of cutaneous tuberculosis the tuberculous process proper usually is situated chiefly in the upper part of the corium, and there is more or less hypertrophy of the papillæ and of the epidermal layers. In the well-marked cases of anatomical tubercle described by Riehl and Paltauf the horny layer is greatly thickened and shows cells in which the nuclei stain more or less, while between the layers of the cells are seen granular masses and the dried products of exudation. In places the horny layer dips down to fill the inter-

papillary spaces. The papillæ may be greatly hypertrophied and between them the rete may send projections deeply into the corium, in which occasionally are seen crypts filled with horny masses of epithelium. Secondary inflammatory changes and pus-infection may occur as in lupus.

Between typical *VERRUCA NECROGENICA* and the ordinary type of lupus vulgaris transitional forms frequently are seen which make it impossible to draw a line sharply dividing these forms of cutaneous tuberculosis. In verruca necrogenica a history of direct infection is often obtainable and tubercle-bacilli are more numerous than in the lupous nodules, though much less abundant than in tuberculosis cutis orificialis.

In *TUBERCULOSIS CUTIS ORIFICALIS*, both in the number of bacilli present and in the type of lesion, there is an analogy with miliary tubercle of other organs. Large numbers of typical, circumscribed nodules are found deep in the corium; bacilli are numerous and easily demonstrated; the degenerative processes go on rapidly, the tubercles breaking down and coalescing to form masses of softened necrotic tissue which soon break through the epidermis to form an ulcer. About the borders of such necrotic areas new nodules are constantly forming, and the whole process is rapid, as in acute tuberculosis of other tissues.

The *SCROFULODERMATA* originate in the subcutaneous tissues and involve the skin secondarily. The lymphatic glands or the tissues about the glands or lymphatic vessels become the seat of the tuberculous process, which runs a subacute course. The glands or periglandular structures finally break down into softened necrotic masses. Such areas of necrosis may remain indolent and superficial, or, in case a gland is involved, may be deep and extend by burrowing prolongations even to the bone. Sooner or later the skin over these softened masses becomes involved in a subacute inflammatory process and gives way, producing the typical ulcer with soft, ragged, and often extensively undermined edges. Experimental inoculations and the presence of tubercle-bacilli have demonstrated these subcutaneous processes to be tuberculous. The number of bacilli present varies greatly, being much larger than in lupus, but much smaller than in the orificial forms of cutaneous tuberculosis. The relationship of the scrofulodermata to lupus is occasionally shown by the formation of typical lupous nodules near the border of these scrofulous ulcers, the result no doubt of inoculation of the skin with the discharge from the ulcer.

Diagnosis of Tuberculosis Cutis.—Epithelioma, though rarely resembling lupus vulgaris, is more often designated by that than by any other false title. Great confusion has arisen from the looseness with which several authors have furnished illustrations of "lupus exedens," which were really pictures of cancer. But the latter is rarely a disease of early life, and when of early occurrence may not persist to adult years; the reverse of which is true in the majority of all cases of lupus. The nodules of lupus are absent in epithelioma,

and the evolution of the disease slower, less painful, and, in its earlier periods certainly, of deeper situation. The ulcer of epithelioma is more often defined and single; its edges whitish, indurated, and everted; its floor uneven and glazed; its secretion scanty and occasionally fetid; its base a mass of indurated tissue. Lupous ulcers are often ill defined and multiple; their edges soft and inconspicuous, neither everted nor undermined; their floors granulating and flattened; their secretion relatively profuse and generally odorless; their bases soft and pliable, though occasionally indurated.

Tubercular, serpiginous, and ulcerative lesions of syphilis often resemble certain forms of lupus. In any doubtful case a history of infection, of other types of cutaneous disease, of mucous patches, of adenopathy, of abortions in women, etc., should aid in the recognition of syphilis. The suspected lesions should be examined carefully for the purpose of distinguishing characteristic lupous nodules in the patch itself or in the periphery of any exfoliating area. In the case of an adult a history of long-existing lupus may often be obtained; and it is worthy of note that syphilis with exceeding rarity displays for long periods of time a single exanthematous lesion or aggregation of such lesions exclusively in one part of the body. Lupous ulcers, often multiple and isolated, insensitive, well- or ill-determined in outline (never reniform or horseshoe-shaped), with supple, low edges, and reddish, smooth, hemorrhagic granulating floor, covered with crusts like soiled parchment of uniform thickness, do not resemble those of syphilis. The latter are often painful, single, circular, and clean cut in contour, with firm, raised, infiltrated margins, and with offensive greenish and blackish crusts, resembling oyster-shells. The cicatrices of syphilis are elegant, smooth, delicate, superficial, circular, and, after pigmentation has disappeared, dead white in color; those of lupus are irregular, indurated, deforming, yellowish white and reddish yellow. Acquired syphilis is a disease of adult life; lupus commonly begins in childhood.

The disks of psoriasis are distinguished from flat exfoliating patches of lupus vulgaris by the relatively large number of the former, by the nacreous lustre of the scales, the reddish hemorrhagic surface beneath, and the sites of election of the disks, usually on the extensor faces of the limbs.

Lupus erythematosus is even more readily distinguished by its characteristics; including the absence of nodules, ulcers, and crusts, the superficial character of the morbid process, the scaliness, and occasional symmetry of the patches. An intermediate form between lupus erythematosus and lupus vulgaris has been described, but most cases so classed probably belong to the type called by Leloir "erythematoid lupus vulgaris," in which nodules are temporarily absent. In all such cases typical nodules of lupus vulgaris develop sooner or later and confirm the diagnosis. The two diseases, unfortunately somewhat similar in name, are distinct in character. The so-called intermediate forms may be instances of flat and scaly epitheliomatous infiltration going on to ulceration.

In acne rosacea with a bulbous condition of the tip of the nose the

redness is vivid; and the telangiectasic complications, with the seborrhœic flux, are conspicuous points of difference from lupus vulgaris. There is, further, no ulceration and little scarring, and the patients have usually suffered from the disease only after arriving at maturity. The mucous surfaces are also spared.

The diagnosis of verrucous growths of tuberculous nature is to be made after an investigation of the history of each case, which often includes a record of contact with cadavers or persons capable of communicating the disorder. The epitheliomatous warty growths on the dorsum of the hands of elderly persons are not to be confounded with tuberculous lesions. In the former there is commonly a history of longer existence of the wart, and no record of suspicious contacts; while a careful search will usually determine epitheliomatous metamorphoses over the cheeks or temples of the elderly man or woman with epitheliomatous warts on the hands. In the latter, too, the facial lesions are usually multiple, fatty-looking scales, thicker in one part than another, resembling those of a severe seborrhœa, but which are removed with difficulty, and which then leave a bleeding surface beneath.

In the orificial cases it must be remembered that tuberculosis of the viscera is a probable coincident disease. The microscope is usually needed for an exact diagnosis.

The acneiform and sycosiform tuberculoses, necrotic granuloma, lupus pernio, folliclis, and other disorders of that group, many of them local evidences of infection of the system by the toxins of tubercle-bacilli, are distinguished by their superficial situation, their tendency to central necrosis, pitting and scarring, and by anomalous symptoms occurring where none such was to be expected. For example, a sycosis, apparently simple, leaves persistent disfiguring infiltrations, with scar-tissue and even ulcerative effects; the acne which should resolve, exhibits deep, sunken, cicatriform pits, or papules which ulcerate; the alopecia of the scalp, which at first seems to be of simple type, results in characteristic changes of the deep tissues.

Treatment of Tuberculosis Cutis.—The internal treatment of tuberculosis cutis is practically that indicated by the condition of the patient; inasmuch as no medicament is known to be capable, after ingestion, of relieving the victim of his local ailments. Of the articles in this category none will be more often indicated than cod-liver oil, the chalybeates, creosote, the bitters, the preparations of iodine, and possibly phosphorus. Iodoform and potassium iodide have been recommended by Neisser, who employs the former in pills, each containing $\frac{1}{2}$ grain (0.033). Guaiacol and creosote carbonate, either of them, in $\frac{1}{5}$ grain (0.33) capsules, have been used with varying degrees of success. In London thyroid-extract has been given for cases of extensive tubercular disease of the skin with seeming benefit, though no complete cures are reported. The hypophosphites are useful in many cases. Arsenic and mercury are powerless to prevent extension of the disease. It is needless to add that a diet of the most generous character is to be supplied, and the rules of hygiene enforced.

Patients of the tuberculous class manifest in the highest degree the beneficial effects of a change of residence and climate—to the seashore or mountains from the interior valleys or plateau-lands; often the reverse for those who reside by the sea or in mountainous countries. It is the change which seems to produce the greatest benefit. An abundance of pure air and a life permitting out-of-door exercise are of the highest importance. The thermal and other springs of several countries furnish resorts where the benefit received is proportioned to the salubrity of the climate rather than to the special advantages of the waters furnished. Unfortunately, a large number of the patients affected with lupus and scrofuloderma are impoverished inmates of public charities or applicants to dispensaries, where these aids in the management of their ailments cannot be utilized.

The local treatment of lupus vulgaris should have in view the removal of the morbid growth as painlessly and with as little resulting disfigurement as possible. These ends may be attained by surgical measures and by chemical and other applications.

The surgical procedure most frequently employed is curetting with a sharp spoon. This, with all other bloody operations in lupus vulgaris, labors under the disadvantage of the possibility that tubercle-bacilli may be disseminated by the traumatism. Competent authors are arrayed on both sides of this question. Small lupoid patches certainly may be spread after resorting to most of the surgical devices employed as remedial agents. The dermal curette is a sharp-edged spoon with or without a fenestrum in the bowl to permit the escape of débris. By it the lupous growth may be completely scraped away, and, if necessary, caustics subsequently applied. Fox and others substitute for the sharp spoon the dental burr or dental excavator, though the change is not always for the better. Morris's double parallel screw-excavator is an improvement on the common burr. Often it is well to supplement the action of the spoon or excavator with the flat electrode treatment of Jackson. Gärtner and Lustgarten originally used as an electrode a flat silver plate attached to the negative pole of the battery, the plate being set in a hard-rubber ring. A current of from five to eight milliampères is employed.

The ablation of the entire lupous patch by the modern methods of surgery, followed by skin-grafting with the Thiersch or Lang method, gives good results, though the lupous growths may return sooner or later in the new skin. The objections to this method are chiefly that it involves the production of a larger and more conspicuous scar, since, as a rule, more tissue is removed by the knife than by the curette and its allies. In the Lang¹ method the excision is made to include both the sound peripheral integument and half of the subcutaneous fat-cushion beneath, the skin-grafts employed later differing from the thin Thiersch sheets in that they include the derma with the epidermis as far as the panniculus adiposus.

In the history of medicine it is seldom that a therapeutic measure has been followed by such satisfactory and brilliant results as those secured by the method of treatment of lupus vulgaris practised by

¹ *Der Lupus und dessen operative Behandlung.* Wien, 1898.

Finsen, of Copenhagen (phototherapy¹). The morbid patch by this method is rendered anæmic by firm pressure with a planoconvex quartz lens, framed in a brass ring carrying two small tubes with four arms through which cold distilled water freely percolates, and through which is concentrated the light from an arc-lamp of between fifty and eighty ampères. The exposures are continued for about an hour daily, during which time a trained nurse in charge of the illumination presses the lens firmly over the spot selected for attack. When sunlight can be employed, its rays are substituted for those supplied by the electric lamp, the heat-rays being excluded and the violet and ultra-violet rays alone permitted to pass. The effects of solar light are, however, less decided and satisfactory than those secured by electric illumination, and as a consequence the out-of-door treatment of patients by sunlight is reserved in Copenhagen for those whose skins are unusually sensitive to the more vigorous and more brilliant light of operating-rooms. The exposure is rarely a source of pain save when the patch attacked is very near the eye, though often followed by redness, hyperæmia, inflammatory reaction, and vesiculation.

Patients relieved by this method of treatment and exhibited at the Dermatological Congress in Paris in 1900 furnished one of the most convincing proofs of the essential value of the phototherapeutic method, a fact fully corroborated by us during two several visits to the Finsen Institute. From a cosmetic point of view nothing can exceed the smoothness and comeliness of the faces subjected to this treatment. As with all other methods extensively pursued for the relief of hundreds of patients, there is a small proportion of failures, and a still smaller proportion of cases in which the electric rays seem to have had a prejudicial effect. No results however, at all comparable as to the number of patients relieved and as to the perfection of the relief obtained, have been secured by other methods in the local management of lupus vulgaris.

The objections to the method are: the length of time required for the treatment (though this is gradually shortening to six months and less); and the need of daily treatments—in some cases two daily—one in the morning and one also at night. The gratifying results obtained, however, much more than compensate for the time required to complete the work.

The Roentgen rays have been employed for a similar purpose, and, it is claimed, with a similar effect by Albers-Schönberg,² Kimmell,³ Pusey,⁴ Himmel-Kasan,⁵ and others. The relatively small number of cases thus far subjected to the treatment does not furnish a satisfactory basis for comparison with the Finsen method.

Without question, next after the Finsen method and superior to it in the matter of the rapidity with which the lupous nodules may be made to disappear, is the thorn treatment employed by Unna. The thorns of the gooseberry bush are saturated in the German "liquor

¹ Cf. "Die Finsensche Lichttherapie, Bang," *Monatsh. f. prakt. Derm.*, 1898, Bd. xxvii.; *Brit. Jour. of Derm.*, Sept., 1899.

² *Deutsch. med. Woch.*, Oct. 13, 1898.

³ *Arch. f. klin. Chir.*, Bd. lvii., Heft 3.

⁴ *Jour. Amer. Med. Assoc.*, Dec. 8, 1900.

⁵ *Arch. f. Derm. u. Syph.*, Bd. 1., Heft 3.

stibii compositus," and one or more thrust firmly and deeply into each lupous nodule which it has been determined to attack. The base of each thorn is then cut off with a pair of fine scissors and the patch covered with a zinc oxide plaster. When the thorns are cast off a simple granulating ulcer is left which in favorable cases heals without delay.

The obvious objection to each of the methods detailed above lies in the fact that an enormous proportion of lupus-patients have nasal and oral symptoms which cannot be reached either by the rays of solar or electric light or by Unna's thorns. The local treatment of these involved mucous membranes is a matter of great importance, and is described below.

Holländer's hot-air treatment of lupus is accomplished by directing upon the lupoid tissue through a metal tube of slender diameter a stream of air at a temperature of about 300° C. The result is for the most part a destructive cauterization requiring complete anæsthesia. The resulting scars are formidable.

The local treatment of lupus vulgaris by the aid of parasitocides is based upon the infectious character of the disease; and in many cases is successful. White,¹ with a view to its parasitic action, applies to the lupous patches rags soaked in solutions of mercuric chloride, 1 to 2 grains to the ounce (0.066–0.133 to 30.), and also applies ointments containing the same quantity of bichloride in the ounce of salve-basis. Favorable results have been also secured by freely painting lupous ulcers with a solution of corrosive sublimate in tincture of benzoin of the strength named. Salicylic acid, 2 to 4 per cent. solutions in castor-oil, and in ointments $\frac{1}{2}$ to 1 drachm to the ounce (2.–4. to 30.); sulphurous acid, or pyrogallol in ointments of 10 per cent. to 50 per cent. strength, spread on linen rags, covered with impermeable tissue, and followed by the use of mercurial plaster and iodoform, have all been successfully employed with the same object in view.

Decidedly inferior to these are the following methods, the first named, most popular in Germany; the second, in France; the third, to-day practically obsolete, and probably not to be revived:

The Paquelin knife is extensively used in Vienna. The finer blades, especially manufactured for the purpose, are thrust, at a red heat, again and again through the lupous tissue until it is destroyed in its depth. Over the whole the larger blade is firmly passed and pressed, the blackish coal resulting being the best subsequent dressing after the serous exudation ceases. Erasion is also followed by the use of the galvano- or thermo-cautery.

Multiple linear scarification, a modification of the Dubini-Volkman method, was once claimed to have changed the prognosis of the disease. It is doubtful whether anything is to be gained by either a preliminary freezing of the part or the use of cutting instruments with many blades. The incisions may be produced with a delicate bistoury held in the fingers like a pen. They should be in parallel lines, closely set together, and crossed; should extend completely through the depth of the lupous growth; and this is determinable after some practice by the

¹ Boston Med. and Surg. Jour., October 29, 1885.

cessation of the creaking resistance which the blade fails to discover in normal tissue. Further, these incisions should extend laterally beyond the borders of the lupous patch into the sound peripheral zone. The bleeding is trifling and readily arrested by firmly pressing small pieces of fine sponge, lint, or absorbent cotton over the part. The edges of the incision unite either by granulation or by first intention; and in both cases seem to serve as starting-points of the reparative process, the material for which, as already pointed out, seems to be supplied from the lupous nests themselves. Subsequent operations, when needed, require a previous freezing of the affected surface. In France and in some portions of the British Empire this method is still popular.

Treatment by chemical cauterization alone is obsolete. The various acids and alkalies, particularly potassium hydroxide and lactic acid. Cosmé's paste, silver nitrate, arsenical, mercurial, and zinc compounds, and sodium ethylate have all been employed thus, and in suitably selected cases have been in the past productive of fairly satisfactory results.

With or without surgical interference, local applications may be employed, such as oily and fatty substances for the softening of crusts; stimulating dressings of tar, iodated glycerin, thymol, guaiacol (Funk), ichthyol, carbolyzed glycerin, iodized phenol, fluorine (Phillipson), naphthol, chrysarobin, and iodoform; as also the carbolated unguents appropriate for the reparative phases of the ulcer left after the destruction of the lupous growth.

Unna advocates the topical application of 2 parts of beech-tar creosote to 1 part of salicylic acid, the latter for its marked effect upon lupous tissue, and the former for what is supposed to be its anodyne effect in obtunding the pain produced by the action of the acid on the surface. That this explanation of the effect of the combination is not wholly correct is shown by the well-known fact that creosote alone is capable of producing a curative effect upon lupous tissue. In a former edition of this work, issued before the date of Unna's experiments, creosote was set down as the *dernier ressort* of the physician in the topical management of lupus vulgaris. It can be used with the greatest advantage in severe cases not only by being brushed freely over the part, but also in the combinations suggested by Unna. It will be found that when employed alone it is far from having at first the local effect of a "morphine of the skin," being productive, where no cocaine has been previously employed, of exquisite pain, which, however, is usually short lived. It should be applied only with the greatest caution by the practitioner's own hands, its effects watched and, if need be, counteracted, as in the local employment of potassium hydroxide. Trikresol operates in a similar manner.

The application of fuchsin in 1 or 2 per cent. alcoholic solutions painted over the part, which has been previously scarified, is advocated by Fox and others. We have employed pyoktanin-blue in some cases with satisfactory results.

In some of the German hospitals the new tuberculin-R, Koch's lymph, is injected, and, it is claimed, with a larger success than follows the older methods. It has not been unattended with danger, and fatal

results have in a few instances been recorded after its injection. In other cases general tuberculosis has been induced; while in yet others the degree of improvement following its employment has been inferior to that more readily reached by other therapeutic measures. The dose is $\frac{1}{500}$ to 1 milligramme, the strength being very gradually increased from the smaller to the largest amount named.

The injection of calomel into the lupous patch has been followed by good results in the hands of Da Costa, Brouse, and Tschlenow.

The treatment of verruca necrogenica and other verrucous tuberculoses of the skin is practically that of lupus vulgaris. The curette may be followed by one of the caustics advocated above, preferably by pyrogallol, or a combination of salicylic acid and creosote. As a rule, mercurial lotions and salves are not well adapted to penetration of the warty or corneous envelope of the growth.

The orificial lesions of tuberculosis cutis may, however, be well treated by these lotions, especially one in which $\frac{1}{2}$ to 2 per cent. of mercuric chloride is dissolved in compound tincture of benzoin or tolu.

Veiel applies in all the cutaneous tuberculoses pyrogallol-vaselin in the strength of 10 per cent., spread upon lint for three or four days. One part to twenty of salicylic acid may often be advantageously added.

The local lesions of scrofuloderma may require the use of hot borated lotions applied temporarily, or kept permanently in contact on compresses covered by impermeable tissue. The results of surgical ablation of enlarged lymphatic glands, broken down or threatening scrofulous "gummata," and the complete disinfection and aseptic treatment to the point of cicatrization of the resulting wounds, furnish proofs of the progress of modern surgery.

In the local management of lichen scrofulosorum Hebra recommends the topical use of cod-liver oil smeared over the lesions, with woollen garments worn outside. At present medicated pastes are preferable. The local treatment of dermatoses of the scrofulous is, in fact, that indicated in each separate case.

The **Prognosis** of tuberculosis of the skin in all its manifestations is in the highest degree variable. Many patients affected with lupus vulgaris, even after the production of the severest grade of deformity, recover and without further local manifestations gain a degree of facial comeliness that is marvellous. The scrofulodermata in the same way are remarkably improved, in the majority of all cases, by skilful medical and surgical management. In other cases systemic tuberculosis develops after even a single tuberculous infection, and grave results may occur either early in life or after years of tuberculous involvement of the skin and other organs. Other things equal, the prognosis in tuberculosis of the skin, as compared with that of other organs, is relatively favorable, due to the sparsity of tubercle-bacilli in most cutaneous lesions, the skin being exposed too largely to external influences to form a good field for development of new colonies of bacilli. Any form of tuberculosis of the skin, however, may result in systemic infection and death.

THE DERMATOSES OF SCROFULOUS SUBJECTS.

(PARATUBERCULOSES, Johnston.)

In this connection it is desirable to consider a group of cutaneous disorders which, while recognized as of occurrence among the scrofulous, exhibit lesions which, at the present time, have very rarely been determined to be sites of bacilli. They are supposed to be due to the presence of toxins, the latter, possibly in many cases, originating in a tuberculous focus in some organ of the body. Certain members of this group have been actually begotten by tuberculous injection.

The evidence, as regards some of these forms, which may be considered, perhaps, as pseudo-tuberculozes, or paratuberculozes, is instructive. The results of inoculation of tuberculous material in different lower animals seem to establish the fact that tuberculosis cutis, lupus vulgaris, and scrofuloderma differ widely in the number of bacilli that can be recognized in their respective lesions. It is, hence, argued that with even fewer micro-organisms present there may exist types of tuberculosis still further removed from those here classified.

In yet other cases the demonstration has been made that the toxins derived from any tuberculous focus in the human body may beget a cutaneous affection uninvolved by tubercle-bacilli serious or short lived, wholly or in part dependent upon the morbid state of the system.

[A] Lichen Scrofulosorum.

(ACNE CACHECTICORUM, ACNE SCROFULOSORUM. Fr., FOLLICULITES DES SCROFULEUX.)

This eruption, first described by Hebra,¹ is characterized by its chronicity, and the occurrence chiefly upon the trunk, back, belly, and thighs, of millet-seed- to pinhead-sized, firm, flat, light- to livid-red, and grouped papules. These are occasionally surmounted at the apex by a minute scale, rarely by an equally small pustule. The lesions are at the onset isolated; later they tend to arrange themselves in coin-sized patches; when evolution is accomplished they are closely set together, the surface of the skin being then of a dirty reddish-brown color, and covered with thin scales, which are readily detached. Often a crescentic outline can be determined in a group of aggregated lesions.

The course of the eruption is slow; often the cutaneous symptoms persist for months without apparent change, awakening little or no pruritus, and are followed by involution, accompanied by slight desquamation and no cicatrices. There may be recurrence.

In 99 per cent. of all cases observed in Austria there was concomitance of the general symptoms of struma named above (submaxillary, cervical, and axillary adenopathy, periostitis, ulcerative dermatitis, etc.), with frequent complications, such as eczema of the scrotum. The disease was encountered in young tuberculous subjects between the periods of infancy and puberty, never after the twentieth year.

¹ See his remarks before the German Surgical Society, Fourteenth Congress.

According to Kaposi, the disease consists in an exudative infiltration of the pilo-sebaceous follicles and the perifollicular tissue. Each papule represents, therefore, the orifice of a follicle, with an infiltrated perifollicular annex; and its apical scale or pustule is formed of a mass of epithelial debris or an inflammatory exudate. Histologically, there is infiltration with lymphoid, epithelioid, and giant-cells, with a caseating area in the derma below the degenerating epidermis. The bacillus of tuberculosis has been very rarely discovered; and the most of inoculation-experiments have been failures.

The disease is readily differentiated from papular eczema by the absence of itching. From the miliary papular syphiloderm it differs in that the lesions of the latter, even though grouped, are always individually distinct. The general symptoms, moreover, are strikingly different in the two diseases. Lichen scrofulosorum cannot be confounded with lichen planus or lichen ruber. Lichen pilaris, however, in a young and lymphatic patient might readily be mistaken for the disease in question.

This scrofuloderm is rare outside of Austria.

[B] Erythema Induratum Scrofulosorum.

(ERYTHÈME INDURÉ DES SCROFULEUX, Bazin.)

This disorder affects chiefly the lower extremities of young persons, especially girls, who have been accustomed to the erect posture for long periods of the day and who exhibit as well unmistakable symptoms of scrofula. The special circumstances in which this form of indurated erythema is produced are, primarily, a somewhat enfeebled constitution, and, as a secondary or exciting cause, toil in the standing posture, as, for example, among laundresses and shop-girls.

The symptoms are acutely developed or indolent, single or numerous, vividly red or purplish-hued, node-like patches on the front and calf of the legs or over the thighs, or even upon the upper extremities (Crocker). At times a single patch extends by multiplication or by spreading from an original site till a broadly infiltrated plaque is formed, somewhat suggestive of the lesions of erythema nodosum. The firm induration of the node is one of its striking features. The nodules may be either superficially or deeply situated; painful and tender or quite insensitive, the last being the rule; and may undergo a tedious involution, or degenerate and produce ill-conditioned ulcers, secreting a thin pus and at times communicating by a fistulous tract with underlying pus-cavities. Often it is difficult to distinguish clinically between these nodes and ulcers and those of syphilis; the diagnosis must then rest upon the history and concomitant lesions. There is, as a rule, absence of constitutional symptoms, and especially of fever, an important point in the distinction between this affection and erythema nodosum. Relapses are not infrequent. The disease is rare, occurring chiefly in public practice.

The tuberculous nature of the lesions has not been determined definitely. There is often enlargement and in some instances suppuration

of the lymphatic glands of the subject of the malady. Johnston¹ and Audry² found in their histological examinations dilated vessels, the endothelium of the coiled portion of the sweat-glands swollen; rarefied connective tissue with œdematous separation and disintegration of fibres; and an irregular infiltration along the lines of the vessels with lymphocytes and epithelioid cells. The hypoderm resembled a sponge. There were no tubercle-bacilli; no mast-cells; no giant-cells.

Treatment is by administration of the remedies most efficiently employed in cachexia and struma, with a generous diet, a recumbent position of the lower extremities when these are the seat of the disease, and the ordinary management of chronic ulceration of the skin of the legs when such lesions are present. In a few cases potassium iodide has been given with advantage when there was no suspicion of syphilis.

[C] Necrotic Granuloma.

(ACNITIS, FOLLICULITIS, ACNE VARIOLIFORMIS, ACNE NECROTICA, TUBERCULIDE, SPIRADENITIS, HYDROSADENITIS SUPPURATIVA DESTRUENS, IDROSADENITIS, DISSEMINATE FOLLICULITIS, GRANULOMA INNOMINATUM, NECROTIZING CHILBLAIN.)

In this affection as yet but imperfectly differentiated from the several disorders classed as paratuberculides and described under different titles, deeply seated, uncolored, painless, and rounded nodules form in the derma or hypoderm which persist for long periods and undergo a slow process of evolution. They at last become attached deeply to the surrounding and overlying skin, assume a more or less vivid, occasionally a brownish-red tint, and project slightly above the general level of the integument. Flattening and distinct depression of the apex occur, and later central necrosis. The split-pea-sized lesions are varioliform as to size and contour when seated on the hairy portions of the body; on the extremities the type is that of the passive hyperæmia of pernio. According to Johnston, the features of varioliform acne are produced when the lesions are pierced by a pilary filament, but those of spiradenitis when the coil-glands are involved. After separation of the dead central mass a minute pigmented pit is left. There is no tendency to coalescence. The resemblance of many of the lesions to a papular syphiloderm is striking.

The disease occurs in the subjects of anæmia, struma, and cachexia, with a tuberculous family history and with coincident keratitis, osteopathy, and menstrual derangements.

No tubercle-bacilli have been discovered in the tissues examined. The morbid process is first distinctly recognized in the corium with a cell-infiltration of perivascular site spreading thence to the coil- and sebo-pilary gland-systems. At first there is a moderate grade of œdema, which is followed by the development of giant- and epithelioid cells. After an arteritis obliterans central coagulation-necrosis follows. The explanation of the process suggested by Johnston is that a non-

¹ "The Cutaneous Paratuberculoses," Phila. Med. Jour., February, 1899. The authors have made use of this essay in their discussion of this theme.

² Annal. de Derm. et de Syph., 1898, t. ix., p. 208.

microbic infection working from within outward first betrays its influence by the vascular changes, and thence the toxin has probably been swept from a distinct focus through the blood- and lymph-streams to the point where its influence is first appreciated in the skin.

[D] Folliclis.

(FOLLICULITE DISSEMINÉE DES PARTIES GLABRES À TENDANCE CICATRICIELLE, Brocq.)

This is one of the paratuberculoses of the skin, in reality a necrotic granuloma, described by Brocq, Barthélemy, Beauprez, Lefebvre, DuCastel,¹ and others, and by them assigned to a group of affections which includes: acnitis, Darier's "tuberculides," lupus pernio, acne cachecticorum, erythema induratum, and other similar affections.

Folliclis is a rare dermatosis of strumous subjects first displayed in light-reddish, macules, which develop successively in crops and which progress to the formation of split-pea-sized, subepidermic and dermic nodules at the apex of which minute vesico-pustules may form and which furnish a thin secretion evidently exuded from the sebo-pilary and sudoriparous follicles. Later, in some cases, these lesions become umbilicated, deeply pigmented, and when involution is completed are followed by a minute cicatrix. They occur on the extremities, the abdomen, and on the hands, in the region last named displaying erythematous plaques with adherent scales, the symptoms here being practically those of lupus erythematosus.

Histologically no tubercle-bacilli have been recognized and attempts at transmission to the lower animals have been largely failures. A small-cell infiltration has been recognized about the follicles invaded, followed by central necrosis and suppuration.

[E] Lupus Pernio (Besnier).

This is an affection of the face (alæ and bridge of nose, ears, malar eminences) and extremities, especially the dorsal surfaces of the hands, which is first displayed in circumscribed erythematous disks. These, at one or more points, may break down into superficial ulcerations where crusts form. There are accompanying œdema and formation of telangiectases. Upon the ears livid points are especially likely to be followed by tissue-necrosis in split-pea-sized areas, the disease here as elsewhere progressing with great indolence. The earlier symptoms are suggestive of the ordinary lesions of chilblain. There is no tendency to spontaneous involution. In some instances there is a striking resemblance of the symptoms to those of Raynaud's disease. Synovitis with fungus has occurred in the joints.

The affection develops in persons of delicate constitution, as also in those who are tuberculous and strumous. As yet no tubercle-bacilli have been recognized in the tissues examined.

¹ Cf. *Annal. de Derm. et de Syph.*, 1887, p. 46; and 1888, pp. 814 and 1045.

ERYSIPELAS PERSTANS.—This affection resembles clinically toxic erysipelas, though the coccus of Fehleisen is not responsible for the symptoms. The affected tissue is œdematous, of a bluish-red, occasionally of a vividly red hue with few subjective sensations, rarely an accompanying fever, and but little tendency to spread extensively from a given point over the body-surface. It is chiefly remarkable for its tendency to persistence, to frequent recurrences from slight causes, and to the production of a brawny, firm, often beefy-red pachydermia, especially of the face, though also of the extremities. The affection occurs in persons suffering especially from purulent foci in the nose (rhinitis, polypus, lupus), in the mouth (caries of the teeth), in the lungs (tubercle), or in other organs where a purulent product is deposited.

Histologically, like the other paratuberculoses, tubercle-bacilli are wanting; there are œdema of the derma and hypoderm, a serous exudate, proliferation of connective-tissue corpuscles, and vascular distention.

[F] Pustular Scrofuloderm.

(TUBERCULOSIS SUPPURATIVA ET BULLOSA ACUTA.)

In this group of disorders the lesions occur as inflammatory papules or pustules of an evident follicular origin. In some cases vesicles and bullæ have been commingled with the other lesions. The lesions may be small or large, few or numerous, limited to one or two well-defined patches or regions, or, as is more commonly the case, diffuse or irregularly grouped. In some of the milder circumscribed cases the manifestations are limited to a few scattered or grouped papules and pustules situated about the hair-follicles. In other instances the lesions are larger, may coalesce, and be covered with more or less bulky crusts beneath which ulcers may form. As a rule, the course of the disease is slow and the lesions are indolent in type. Occasionally the symptoms are more acute. In the majority of cases the folliculitis is evidently due to a local infection with pus-cocci in tissues having but feeble powers of resistance. In some instances, however, the toxin of a tuberculous focus may be responsible for the symptoms.

[G] Acneiform Group of "Paratuberculoses."

An acneiform group of paratuberculoses results from the common habit of picking and scratching the scalp, face, and beard. The finger-nails in these cases are probably the carriers of pyodermic infection in the skins of strumous and tuberculous subjects. The "lupoid sycosis" of certain writers refers to a class of cases which may be regarded as distinct from the simpler varieties of sycosis, since in the "lupoid" forms lesions persist for several years, and finally leave atrophic and scar-like or simply wasted lines, points, or areas in the region of the male beard. Some of the disorders of the scalp termed "epilating," "cicatrical," "unnamed," "follicular and perifollicular," and "neurotic" alopecias, may be one day assigned to this class of affections.

ACNE NECROTICA (ULERYTHEMA ACNEIFORME).—Under the title

last named Unna¹ describes and figures a disease on the face of a young girl, beginning with the production of papules in the centre of the cheek, where finally developed comedone-like masses; the lesions without suppuration eventually left reticulated and pitted scars perceptibly sunken and traversed by dull-white ledges between which comedones were visible. The lesions were also visible about the scalp, forehead, and ear. Anatomically it appeared that inflammatory symptoms resulted in a perifollicular cell-infiltration, with dilatation of lymph-spaces and consequent changes in the epithelium, as well as in the muscular, elastic, and other tissues.

“TUBERCULOUS ECZEMA” (Unna) is merely an exudative affection, which may be recognized in proximity to the scrofuloderma, a process awakened by the irritative effects of the latter; or the disease occurs, as do other affections, in scrofulous patients.

MELANODERMA OF THE SCROFULOUS (PIGMENTARY TUBERCULIDE).—In some of the subjects of scrofula and tuberculosis a hyperpigmentation of the skin has been produced strongly resembling the pigmentary syphilide. The coloration is in varying shades of brown, and forms a reticulated staining of the regions about the face and neck, though other parts may be involved. Between the pigmented spots lighter points and dots of a less deeply stained integument are commonly visible. The well-known influence of tuberculosis of the adrenals in the production of pigment-changes in the skin lends color to the belief that some of these cases are due to the toxins of a tuberculosis of non-integumentary tissue. Similar pigment-changes in the skin have been determined to be the result of paludism, carcinoma, syphilis, and other disorders: and it is reasonable to conclude that the changes here set down in some instances at least are the product of tuberculous toxins.

LUPUS ERYTHEMATOSUS (consult the following chapter) is by some authors classed with the disorders grouped under the title of tuberculosis cutis or as a paratuberculosis. The evidence that it is itself a cutaneous tuberculosis is wanting. That, however, it is in some cases a dermatosis of the scrofulous cannot be questioned.

LUPUS ERYTHEMATOSUS.

(Lat. *lupus*, a wolf.)

(LUPUS SEBACEUS, LUPUS SUPERFICIALIS, “SCROFULOUS RINGWORM,” SEBORRHŒA CONGESTIVA, LUPUS ERYTHEMATODES, LUPUS NON-EXEDENS, ULERYTHEMA CENTRIFUGUM. *Fr.*, SCROFULIDE ERYTHÉMA TEUSE, ERYTHÈME CENTRIFUGE.)

This disease was first described by Bielt under the title *Erythème Centrifuge*. Hebra, in 1845, described it among the seborrhœas, as *Seborrhœa Congestiva*. Its present title was given by Cazenave in 1850.

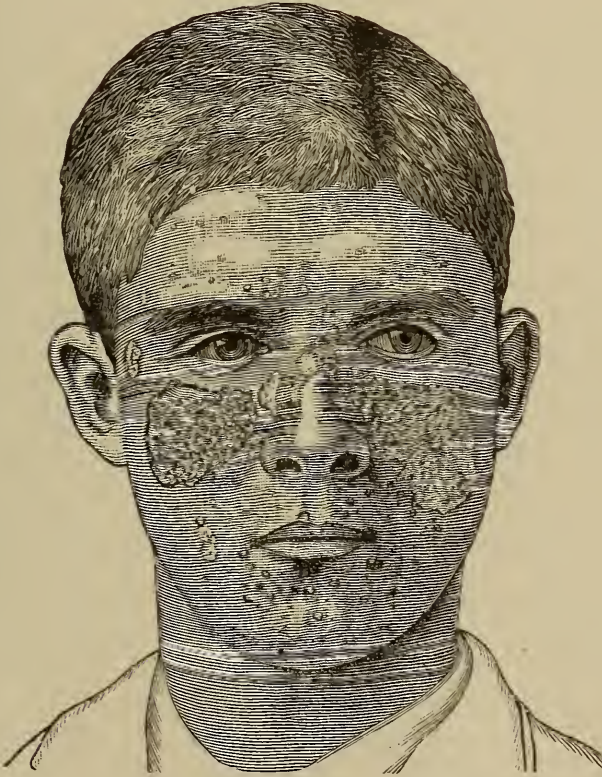
Symptoms.—The disease is first exhibited in one or several rape-seed- to bean-sized, slightly elevated reddish macules which do not

¹ Internat. Atlas of Rare Skin-diseases, 1889, i.

entirely fade under pressure and are covered with a grayish or yellowish and sometimes slightly greasy, adherent scale.

In the ordinary DISCOID form of the disease the primary lesion described above enlarges its periphery in the course of months or years by a slowly continuous development. It may thus gain the size of a small coin or a large saucer. The disks or patches are well defined in outline, of a color varying with the complexion of the patient and with the acuteness or type of the disease, from a rosy-pinkish to a deep-purplish hue. The shape is usually circular, oval, or in figures representing combinations of these outlines, but it may be irregular from the junction of two or more progressing patches. Its border is red,

FIG. 70.



Lupus erythematosus of the face.

firm to the touch and distinctly elevated, and not infrequently exhibits comedones or light adherent scales. The centre is depressed, paler in color, and shows either adherent yellowish-gray scales or a glistening unbroken epidermis. Close examination will disclose in most cases dilated follicular openings which may be plugged with dried sebaceous matter or horny epithelium. The scales vary in color, being at times of a clear white or whitish yellow, and again often from concurrence of comedones of a reddish or brownish tint. They are usually scanty and adherent, but may be abundant, and can occasionally be seen firmly fastened to the orifice of the excretory duct of a sebaceous gland by means of a horny projection from the under surface. In some cases the erythematous redness, in others the crusted surface of the disk, is

the most pronounced feature. In the latter there are seen at times patches exhibiting almost a pure type of *seborrhœa faciei*.

The disease is seen most frequently on the nose and cheeks, over which it may spread symmetrically in a form that has been likened by Hebra to the open wings of a butterfly. It occurs also on other parts of the face, the ears, the scalp, the back of the hands and exceptionally on other portions of the body. On the scalp the dilated follicles and comedones are especially pronounced, while the elevated border is rather less distinct than on the face. The alopecia which results is permanent. Rarely the mucous membrane may be involved, presenting reddened plaques with minute excoriations, or partially covered with a whitish exudate or with punctate scars.

As the borders advance the centre not infrequently undergoes involution, and may show typical scars even while the outer rim is actively progressing. When the disease undergoes general involution both the centre and the border gradually become paler in color and less elevated. Some of the patches resolve without leaving a trace of their existence, but in most instances typical scars are left. These are indelible and characteristic. They are generally uniform and superficial, can be pinched up readily between the thumb and finger, are of a dull-whitish tint, and rendered punctate in a peculiar manner, suggesting the action of the engraver's tool in what is known as the "stippling" process. They are never pigmented, puckered, radiate, stellate, corded, or deeply attached.

The disease is remarkably chronic in its course, lasting in cases for a quarter of a century or even longer, and throughout not interfering with the general health. So-called "galloping cases," usually with marked visceral complications, are described by French writers. The disease varies in the subjective sensations it produces, being generally accompanied by no discomfort, though at times by some itching or burning. It is more common in women than in men, and is a disease of adult years, usually appearing first in the third or fourth decade. Kaposi reports a single case in a child three years of age.

Though the disease usually progresses by a very slow extension of the border, it may, after remaining comparatively stationary for months or years, rapidly advance for a short period and then again remain stationary. These periods of rapid progression usually follow or are accompanied by a peculiar type of acute dermatitis suggesting a mild form of *erysipelas*.

Among the unusual features of the disease may be mentioned an acute form, named by the French *ERYTHÈME CENTRIFUGE*, which has most of the characteristics described above, except that the symptoms are more acute and the vascular elements more marked. This condition may disappear, leaving the skin entirely normal, or it may be followed by the more common type of the disorder. The reddened plaque has been by several authors likened to the lesions of exudative erythema, being hot to the touch, tender, raised, and manifestly centrifugal in its mode of extension.

The *TELANGIECTATIC* form is occasionally seen. Here points, spots, plaques, or large disks, on the surface, chiefly of the face, usually well

defined, present a rosy-reddish, or deep-purplish color which disappears under pressure. When examined with care the color is seen to be due to dilatation of the cutaneous vessels. The surface may be either slightly œdematous, or infiltrated, and correspondingly elevated. There is an absence of scaling and of dilated follicles, but typical scars not infrequently follow the involution of this type of the disorder.

LUPUS DISSEMINATUS.—The disease occasionally occurs in a diffuse form. As a rule, the lesions first appear on the face, but later they develop on any part of the body, and often large surfaces are involved. The lesions are small, varying in size from that of a pinhead to that of a bean, and though usually presenting characteristics similar to the beginning patches of the more common type, they may assume atypical forms resembling the lesions of erythema multiforme, urticaria, syphilis, acute psoriasis, or pityriasis rosea. At times the subjective sensations are severe (itching, burning, heat, etc.), and the patches may even be the seat of vesicles, pustules, or bullæ. This form of the disease is accompanied in most instances by such systemic disturbances (arthritic, gastro-intestinal, and febrile) as occur in erythema multiforme. In rare instances there are changes suggesting erysipelas, sometimes accompanied by typhoid and other malignant symptoms. In some of these cases death has resulted.

LUPUS PERNIO¹ is another unusual form in which the lesions are exhibited on the fingers and toes particularly, but also on other parts of the hands and feet and on the pinna of the ear, beginning as a more or less persistent erythema of the type of pernio (chilblain). Like the latter disease, this erythema may disappear and reappear with the seasons for several years, but eventually may persist and assume the discoid type.

THE LIVEDO FORM.—A rare subvariety is recognized on the face, hands, and other regions where the symptoms present the character of local asphyxia. Here the influence of the trophic nerves, as in other conditions with similar symptoms, is distinct. The disease begins with the production of livid spots in the regions named, which persist for months or even years, and eventually degenerate at the centre, leaving a slough beneath which is an ulcer. In these cases, also, tuberculous complications may occur in the joints.

Etiology.—Lupus erythematosus is described by some writers as a variety of lupus vulgaris, but the histopathology of the former disease, the absence of tubercle-bacilli, and the negative results of many inoculation-experiments seem sufficient to disprove such relationship. The transitional forms occasionally reported usually prove to be mild and unusual types of lupus vulgaris.

Although lupus erythematosus has none of the essential characteristics of a local tuberculosis, it occurs not infrequently as a dermatosis of the tuberculous. Besnier was the first to call attention to the fact that lupus erythematosus is in many instances associated with general or local tuberculosis. Cases in which this association occurred have been

¹ Cf. contributions to this subject by one of us, *Jour. Cutan. and Ven. Dis.*, 1884; and by Ohmann-Dumesnil, Ninth Internat. Medical Congress, 1887.

reported by a number of observers. Boeck¹ records forty-two cases of the common discoid type, in twenty-eight of which he found evidences of present or past tuberculosis. Roth² collected records of two hundred and fifty cases of lupus erythematosus, in one hundred and eighty-five of which evidence of local or general tuberculosis could be obtained. In such cases Boeck concludes that the toxins of the tubercle-bacillus act first upon the vasomotor centres of the skin and later upon that portion of skin which is the seat of the vasomotor disturbance.

Tuberculosis should thus be counted as an important factor in the etiology of lupus erythematosus, but that it is the sole cause or even an essential factor has not been demonstrated. The disease is seen frequently in individuals in whom there is no history or other evidence of tuberculosis in any form. It occurs in conjunction with anæmia, chlorosis, and other disorders. In many patients careful investigation fails to discover any other evidence of ill health. By some writers the disease is considered a chronic inflammation due to a specific infection.

The disease is more common in women than in men, two-thirds of the former to one of the latter, and usually appears first in the third decade of life, in this particular presenting a contrast with lupus vulgaris. It may, however, first develop in childhood, middle life, or old age.

Lupus erythematosus may follow eczema seborrhœicum, acne, undue exposure to sunlight, variola, erysipelas, vesication with cantharides, or the traumatism of leech-bites. It may appear where the curette has been employed in a patient with a characteristic patch elsewhere on the face. It occasionally develops on portions of the face and hands that have been subject to recurrent attacks of pernio.

Pathology.—Lupus erythematosus has been studied carefully by a number of observers, but unfortunately they do not agree either in their histological findings or in their conclusions based upon the latter. In general it may be said that the chief changes are found in the upper half or third of the corium in the form of a dense infiltration of small round cells of embryonic type, a small proportion of which is probably the result of proliferation of the fixed cells of the part. The infiltration varies greatly in extent and in density in different types of lesions, but is most pronounced along the course of the vessels. It is often found in slight degree in the deeper parts of the corium and subcutaneous tissue; but it nowhere forms nodules as in lupus vulgaris; there are no giant-cells; and there is no degeneration of a mass of cells as in the latter disease. Individual cells here and there undergo a granular and fatty or colloid degeneration, disappear by absorption, and are replaced by new cells. The connective-tissue fibres are destroyed in the same way. Many of the vessels are seen to be greatly distended and choked with red blood-corpuscles, others show a proliferation of their walls and in some cases an obliterating endarteritis. Diffuse or localized hemorrhages are found in the upper part of the cutis. By some observers the vascular changes are considered primary in the process. The sebaceous glands are at first

¹ Arch. f. Derm. u. Syph., 1898, Bd. xlii., S. 71.

² Ibid., 1900, Bd. li., S. 3.

hypertrophied, affected with hypersecretion, and become filled with cells and abnormal sebaceous matter. Later both they and the ducts of the coil-glands may become infiltrated, undergo degeneration and disappear, leaving the peculiarly punctate form of scar characteristic of the disease.

The epidermal layers are involved secondarily. They become atrophied, and the interpapillary depressions of the rete as well as the papillæ are largely obliterated.

Fordyce and Holder¹ investigated a number of cases of the discoid type and describe a peculiar blocking of the capillaries with blood-cells which they believe to be the primary change. They divide the factors making up the histopathological complex into the round-cell infiltration, the peculiar degenerated condition of connective tissue, and the secondary atrophy. They find that the commonly described fatty and granular degeneration is not characteristic of the process, and recommend that for purposes of study tissue from lupus erythematosus areas be imbedded in paraffine and stained with acid orcein.

Robinson,² after examining a number of cases and reviewing the published reports of others, states that the primary lesion, which may be seated in any part of the corium, is focal in character, and when fully developed constitutes a new-growth, which is reticular in structure and closely connected with the lymph-channels. He concludes that "lupus erythematosus is a chronic inflammatory disease of the cutis with special histological characters, as shown by the changes in the blood-vessels—new blood-vessels in the affected area, lymph-vessels and lymph-channels, and the new-formation of an adenoid-like tissue—by reticular tissue, by the presence of mononuclear and by the absence of polynuclear cells in the cell-infiltration; and that these changes must depend upon the presence of a poison generated *in loco*. In other words, lupus erythematosus is a local infective process—a granuloma."

Diagnosis.—The facies of the patient with lupus erythematosus of that region is usually so characteristic that the disease is there recognized with ease. When the hand and other portions of the body are involved the diagnosis is somewhat less readily established. In the hand the disease has a predilection for the dorsum, and invades the palm usually only by extension to it from behind.

From lupus vulgaris erythematosus lupus may be recognized by its occurrence originally at a later period of life; by its greater tendency to symmetry; and by the absence of nodules, ulceration, and extension to the deeper portions of the skin or underlying structures. Cases undoubtedly occur in which the diagnosis is difficult, as in the type called by Leloir lupus vulgaris erythématoïde. But as in all cases of lupus vulgaris typical nodules appear sooner or later, the diagnosis can eventually be established.

In eczema there is usually some history of moisture; in erythematosus lupus, rarely. In eczema, also, the itching is a more persistent and distressing symptom; but the acuteness of even chronic eczema, as

¹ N. Y. Med. Record, July 14, 1900.

² Trans. Amer. Derm. Assoc., 1898.

compared with lupus erythematosus, will suffice to distinguish the two diseases. From eczema seborrhœicum, however, the diagnosis may be difficult and may have to depend on a therapeutic test, the latter disease disappearing under appropriate treatment. Psoriasis is rarely, if ever, limited to a single patch on the face; it is also characterized by more lustrous and more readily exfoliating scales. Its patches are, furthermore, uniformly well covered with scales, and are of equal flatness in all parts, while those of lupus erythematosus are irregularly squamous, the scales being often clustered at the orifices of the ducts of the sebaceous glands, while the rim of the patch is elevated and the centre depressed. From pernio the diagnosis sometimes can be made only after determining whether the lesions disappear during the warm season, as in pernio; or persist, as in lupus erythematosus.

In acne rosacea there are marked telangiectases and papulo-pustules or nodules which are not found in erythematosus lupus. In tinea circinata there may be a clearing, but never a cicatriform centre of the circular disk. The circular serpiginous syphilodermata of the face occur usually with other manifestations of lues, are characterized by greater infiltration, a more rapidly progressing border formed by the coalescence of individual papules or tubercles, and in most cases the syphilitic lesions exhibit distinct signs of ulceration. The not infrequent modification or masking of a patch of the disease by an acute or subacute dermatitis (often seborrhœal in character) should be borne in mind.

Treatment.—The internal treatment of this affection is not highly satisfactory; often none is indicated or required. Of course, the general health of the individual should be carefully investigated, and all defects remedied if possible. The administration of potassium iodide, mercuric iodide, iodoform in 1 grain (0.06) doses (Whitehouse), starch iodide, arsenic, iodoform, ammonium carbonate, ichthyol, sodium salicylate, and many other remedies have been advocated by different writers. It is doubtful if these articles ever do good unless indicated by the patient's general condition, while they often do much harm. The last three remedies on the list given above are said by Fox, Unna, and others, to lessen the congestion of the face. When they do produce this effect it is possible advantage may be derived from their use.

The local treatment of the patches of the disease is of importance, for though the number of cases amenable to treatment is decidedly in the minority, the fact that even a few improve or recover under treatment is sufficient reason for attempting to remove this unsightly disorder. The number of remedies recommended for local use in lupus erythematosus is enormous. White,¹ in reviewing the subject, has enumerated some fifty of those most promising, at the same time calling attention to the fact that lupus erythematosus is no exception to the rule that "the curability of a disease is in inverse ratio to the length of the list of the means recommended for its cure." He admits that our treatment of this disease is wholly empirical and not very hopeful. Unna² attempts a rational form of treatment based on

¹ Jour. Cutan. and Gen.-Urin. Dis., 1898, p. 457.

² Ibid., p. 465.

his conception of the etiology and pathology of the disease and of the action of certain remedies. While his scheme is based largely on theories that are not yet capable of demonstration, the details of his treatment are of practical value. He calls attention in particular to the fact that while the epidermis is exceedingly dry and hyperkeratotic, the cutis is markedly œdematous and the seat of dilated lymph-spaces and channels, and emphasizes the dangers of stimulating a dry indolent process into an active dermatitis.

For convenience, the remedies used may be divided into three classes: the soothing and astringent, the stimulating, and the destructive. The choice of remedies will depend largely upon the type of the disease and on the character of the individual skin. In the acute, inflammatory, or vascular type soothing remedies alone should be used, and on a skin which reacts readily to stimulation stronger remedies are not allowable. Nor should it be forgotten that the indolent forms of the disease not infrequently under treatment become acutely inflamed, and call for the temporary use of soothing measures. Inasmuch as the affection is one the involution of which occasionally is accomplished under the influence of mild topical applications, and is succeeded very rarely by grave sequels, the simpler measures should always be adopted first. In the way of soothing and astringent preparations, the lotions, powders, simple ointments, and pastes recommended for the treatment of acute eczema can be employed to advantage. The zinc oxide powders and lotions are especially to be commended, as are also the cold-cream salve, the Hebra, and the zinc oxide ointments. The paste containing equal parts of lanolin, vaselin, zinc oxide, and talcum makes an excellent base. Boeck's liniment (talci, amyli, āā 3ijss (10.); glycerin., 3j (30.); aq. plumbi, 3v (160.); and Unna's "pulvis cuticolor" (zinc. oxid., boli rubræ, āā, 2; boli albæ, magnes. carbonat., āā, 3; amyl. oryzæ, 10) are valuable preparations in acute and irritable stages of the disease.

Frequently much can be accomplished through protection and compression of the surface by the application of collodion, the glycogelatin, or tragacanth-jelly. Unna recommends especially for irritable cases:

R	Ichthyol. (vel ichthyol. sulfon.),	3ss;	2	
	Collodii,	3v;	20	M.

For more indolent cases:

R	Saponis virid.,	3ss-ij;	2-4	
	Collodii,	3v;	20	M.

To the latter may be added 1 or 2 parts of salicylic acid.

Unna recommends also gelanthum as a substitute for collodion in the above formulæ, for though it does not produce as much compression as the latter, it is more convenient in that it may be washed off at any moment with warm water. A favorite formula with him is potass. hydrat., 1; gelanthum, 1000.

For the purpose of producing more or less stimulation of the surface there may be added to the lotions, ointments, and pastes suggested

above, from 2 to 20 per cent. of sulphur, or from 1 to 5 per cent. of salicylic acid, white precipitate, resorcin, ichthyol, or tar. The mild salicylated soap plasters or the plaster-mulls containing the above remedies in small amounts, or a reduced mercurial plaster may be used where a moderate amount of stimulation is desired. Excellent results follow the use of green soap applied as a plaster or in the form of tincture. It not only cleanses the patches of the scales, but also stimulates the surface, often to the extent of inducing a reparative process. The patch may be briskly rubbed either with soap or tincture of soap in combination with hot water, after which a simple ointment or one containing a small amount of sulphur or other of the remedies suggested above may be applied. When decided irritation of the parts is produced, the soap should be discontinued and the hot water and ointment be employed alone for a time. A decidedly beneficial effect is noted occasionally after the topical application, for twenty minutes at a time, of very hot water alone. After drying, the surface should be dusted with a powder or covered with a simple ointment or paste.

The following is a gentle stimulant :

R	Zinci sulphat.,	}	āā 3 ss;	āā 2	M.
	Potassii sulphuret.,				
	Spts. vin. rectific.,		f 3iij;	12	
	Aq. rosæ,		f 3iijss;	105	
Sig. To be diluted as required for external use.					

The following is a formula for a stronger lotion :

R	Chrysarobin.,	}	3ijss;	10	M.
	Acid. salicylici,				
	Calaminis pulv.,		āā 3ss;	āā 2	
	Ætheris,		f 3j;	4	
	Collodii flex.,		f 3v;	20	
Sig. To be applied with a brush.					

The non-vascularized, indolent varieties of erythematous lupus are often treated with very satisfactory results by the topical application of a saturated solution of pyoktanin-blue. This method has the great disadvantage of producing a deep bluish stain of the face, but the disfigurement is willingly tolerated for a brief period by patients who have long suffered from the facial unsightliness of the disease itself. The solution is thickly painted daily over the entire portion affected; and the application usually may be made by an unskilled hand. No pain is produced and no untoward effect of any kind has been noted. The applications have been repeated continuously for sixty days and more with excellent results.

Enzymol painted over each patch several times in the day has been followed in some cases by marked improvement.

Hans Hebra¹ applies several times daily alcohol on cotton pads.

¹ Wien. med. Woch., 1899, pp. 13-18.

The evaporation of the spirit and abstraction of water produce the beneficial effect.

Finsen's phototherapy, described under the treatment of lupus vulgaris, and the employment of the *x*-ray have been successful in a few cases.

In exceedingly obstinate cases, those especially in which the elevated rim of the erythematous disk refuses to yield to the simple measures described, a solution of caustic potash in distilled water, 1 part to 2 or 4, may be gently applied with a camel's-hair brush, and the alkali immediately neutralized by the addition of dilute muriatic acid as soon as the desired effect is produced. That effect, it must be remembered, is superficial cauterization only. When the sero-sanguineous exudation and reactive effects disappear the rim is seen to be flattened and to have lost in part its violaceous blush. After such severe application, which should never be trusted to the hand of one unskilled in its use, an anodyne cerate containing morphine or opium should be spread over the part.

In indolent patches where decided stimulation or even a very superficial destruction of tissue is desired, mercurial plaster, the stronger salicylated soap-plasters, and plaster-mulls are to be recommended, or creosote, carbolic acid, thilandin, chrysarobin, pyrogallol, salicylic acid and pyrogallol (1 part of the first and 3 of the second to 40 parts of flexible collodion, Brocq), silver nitrate, lactic acid, or Fowler's solution may be used. Two drachms (8.) each of iodine and potassium iodide mixed with 4 drachms (16.) of glycerin; or equal parts of chloral, tincture of iodine, and carbolic acid, are recommended highly. These stronger remedies, however, are to be used with great caution and only in indolent cases, and then only after milder measures have failed to produce good results.

Where more extensive destruction of tissue is required caustics are applied, as carbolic, lactic, pyrogallic, or chloracetic acid. A strong solution of potassium hydroxide or mercuric nitrate, or an arsenical paste, may be employed.

In a few cases electrolysis has been of benefit. Erasion with a dermal curette, as well as operation by multiple punctures or by linear scarifications, is of less value than in lupus vulgaris. Erasion has in some instances been followed by involution of the disease, but also, as a rule, by cicatrices that are no less disfiguring than the original disorder.

Prognosis.—A favorable opinion with respect to the future of the disease can never safely be given; though as regards the general health and comfort of the patient there can rarely be question. At the same time the affection is capricious in its course, and may on occasions, after long periods of persistence, rapidly improve under the simplest treatment. Spontaneous involution with disappearance of all symptoms is reported in some cases. The disorder is liable to relapse, though not to frequent recurrence. Its tendency to the production of persistent scars should always be remembered in formulating a prognosis.

SYPHILIS.

(Gr. *σῦς* and *φίλος*, a companion of swine: term coined for poetical purposes by Fracastor.)

(LUES VENEREA, MORBUS GALLICUS, POX, "BAD DISORDER." *Fr.*, VÉROLE; *Ital.*, SIFILIDE; *Ger.*, LUSTSEUCHE, KRANKHEITEN DER FRANZÖSEN; *Span.*, SIFILIS; *Swed.*, RADEZYGE.)

Syphilis is a chronic and infectious disease not yet actually demonstrated as having a microbic origin, but its position among the infectious granulomata is practically established. Lustgarten, Doutrelepon, and others have demonstrated the presence of bacilli (resembling those found in tubercle) in papules, nodes, chancres, and secretions from syphilitic lesions; but the strict requirements of science as to proofs of etiological value for these particular germs have not been satisfied with respect to this disease. Whether these micro-organisms or others are finally demonstrated to be the potent agency in producing syphilis when it is transmitted by the medium of a virus, it is at least certain that late investigations into the nature of lepra and tuberculosis lend strong support to the doctrine that the contagium of syphilis is due to the presence in its secretions of a species of bacterium.

Syphilis has been described as an "imitator of other diseases." The manifestations of the malady are certainly protean in character, and they may occur in every organ and tissue of the body. These phenomena are both like and unlike the symptoms of non-syphilitic diseases of such organs and tissues. It would, therefore, be more in accordance with facts to describe syphilis as a special mode of disease. Its phenomena differ from other pathological phenomena chiefly in the syphilitic modality with which they are impressed. After infection there is a different behavior of the living matter of which the body is constituted. Its mode thenceforward is temporarily changed as regards the process of disease. Hence the importance of recognizing this modality in relation to disease of the skin, and of ascertaining the limits within which this influence is both originated and exhausted.

Ricord was first to classify the phenomena of syphilis in three distinct stages. In the first stage, or primary syphilis, were included symptoms relating to the chancre and its accompanying adenopathy. In the second stage, lasting from the date of the onset of general syphilis during a period of about two years, were grouped symptoms that were, as a rule, superficial, symmetrical, and more or less transitory. In the third, or tertiary, stage the symptoms included were, as a rule, asymmetrical, more profound, involving the subcutaneous and deeper tissues, and invading often not merely the skin, but also the osseous, cartilaginous, and other structures of the body, including the viscera. This simple scheme when first given to the scientific world revolutionized all previous conceptions of the disease, and has dominated the medical profession up to the present time.

But there are objections to a continued acceptance of this scheme, based largely on its incompleteness. The distinctions it seeks to make are wholly artificial, are defined by poor limits, and so often are completely negated that they fail to explain the most important of accidents.

To be consistent and to explain in part the violations of their time-schedule, the French have coined such phrases as "precocious," "tardy," "galloping," etc. Further, the mind once dominated by this scheme was educated to look for the evolution of symptoms within each of these artificial stages in a determinate order, *e. g.*, after the occurrence of macules succeeded papules; after these, pustules, tubercles, etc., a progression rarely observed in any given case.

The **Symptoms** of syphilis are best studied, as they are clinically displayed in distinct departures from the infection-moment, along lines which are not fixed, but between which symptoms are intermingled with varying shades of severity. The four chief classes which may thus be recognized include most of the clinical pictures of syphilis:

I. Benignant Syphilis, with Superficial and Transitory Symptoms.—In this first class the skin-lesions of general syphilis are few and at times are even insignificant. A macular rash, for example, over the surface of the chest and belly, lasting for a few days or for a week or more, accompanied by ganglionic enlargement, after involution, leaves the patient for the remainder of life free from obvious signs of the malady. These instances are rare.

II. Benignant Syphilis, with Superficial and more or less Persistent Symptoms.—In this class are to be catalogued most cases of the disease. Some cases relapse to it from the class previously described; others, fewer in number, retrograde to one of the groups named below. There is throughout no cachexia, and the skin-symptoms of the affection are neither destructive nor deep. Their chief significance lies in the fact that they may persist or may recur until the disease, either as a result of treatment or of a decline due to other causes, ceases to manifest itself by any symptoms whatever.

III. Malignant Syphilis, with Profound, Relapsing, or Persistent Symptoms that Ultimately Resolve.—In this group are collected those cases in which, with persistent or with recurrent symptoms gradually involving the deeper structures of the body, the system suffers to the extent of exhibiting the signs of cachexia. Patients in this class, by reason of efficient treatment or the reverse, are readily transferred both to the second class and to the fourth.

IV. Malignant Syphilis, with Profound and Relapsing, or Persistent Symptoms that are Ultimately Destructive.—In this class are included the gravest forms of the disease: those exhibiting deep and destructive cutaneous lesions; those implicating the viscera, bones, and other structures; those interfering with the integrity of organs by reason of either atrophic or degenerative changes succeeding a circumscribed or gummatous involvement of tissue.

No one of the groups of symptoms named above necessarily follows any other. The last-described group may occur within a few months after the appearance of so-called "primary syphilis," even though formerly included in the old nomenclature among those of late, or tertiary, type. Many cases, indeed, of grave syphilis are of the type described by the French as "precocious"; that is, they develop symptoms of gravity either before or soon after the healing of the chancre.

CHANCRE.

Every attack of acquired syphilis exhibits as a first symptom an infecting chancre, and every infecting chancre signifies syphilis.

A chancre is that modification of the sound or of the pathologically altered skin or mucous membrane, preceded by a period of incubation, characterized by sclerosis, and accompanied by adenopathy, which constitutes the initial lesion of inevitable syphilis. Chancres usually appear upon or about the genital organs simply because these organs are most often exposed to the disease. These lesions may, however, occur upon any portion of the surface of the body.

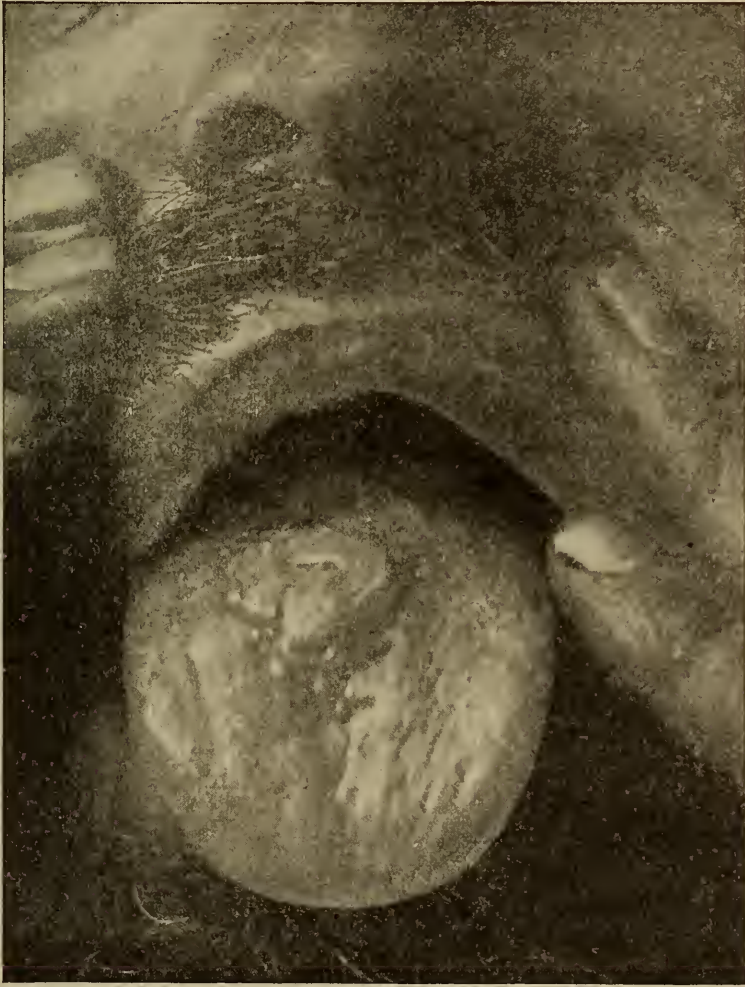
Chancres appear after a period of incubation—an interval of time between the date of exposure to the disease and the manifestations of its first symptom. This period averages twenty-one days, but it may extend from ten days to two months and even more.

The chancrous modification may involve, as stated above, the normal or the pathologically altered skin or mucous membrane. Upon previously sound surfaces chancres may appear, after an incubative period, as macules, papules, tubercles, erosions, fissures, or ulcers, each, or either of which, at some future period of its history is characterized by a peculiar hardness of the tissues about and beneath the lesion, this condition being known as the "initial sclerosis." These symptoms vary according to the location of the chancre and the friction or other external irritation to which the lesion has accidentally been subjected. Generally it may be said that all chancres tend to conform to the papular type, the macule developing into the chancrous lesion, the tubercle being evolved from its exceptional enlargement, the ulcer from its degeneration, and the erosions or fissures from the accidents of its less pronounced features. Occurring upon mucous or quasi-mucous surfaces these lesions are influenced by heat, moisture, and friction (labia, prepuce, etc.). Here the superficial erosions are usually circular in outline, are very slightly depressed, and they rest upon delicate beds of sclerosed tissue, the so-called "parchment-induration." The papule is often represented by a tolerably well-circumscribed, macular discoloration of the membrane, where coarse examination would scarcely suggest elevation of the surface, with a sclerosis of no greater extent than that of the erosion, with which it probably sustains a close relation. As a result of heat, moisture, and friction, however, the typically dry and scaling papule constituting the chancre of the integument is here rarely encountered. More often the lesion is a circumscribed ulcer with clean-cut walls, penetrating deeply to the derma or even below, with a scanty secretion and a reddish floor, resting upon a split-pea-sized mass of sclerosed tissue. Other usual forms are superficial erosions, in themselves of insignificant aspect, surmounting large nodules, tubercles, or even long linear ridges of densely sclerosed tissue, undergoing repair or degenerating according to the condition of the patient and the treatment to which he has been subjected. These erosions are usually out of proportion to the size of the indurated mass upon which they rest. Such voluminous indurations are occasionally perforated by deep conical or funnel-shaped

ulcerations of formidable aspect, to which the name "Hunterian chancre" was once applied.

Occurring upon cutaneous or mucous surfaces, where there has been a previous morbid process, the syphilitic mode is impressed upon the symptoms significant of such antecedent disease. This accident is sufficiently common, and the resulting lesions are as various as are those of different diseases. Thus, a man or woman may be infected with syphilis at the site of an herpetic vesicle upon the lip or the

FIG. 71.



Chancre of the tongue.

genitals, such vesicle being unbroken and recent, or several days ruptured; or at the site of a balanitis; or of a vegetation; or of the soft contagious sore of the genital region best recognized under the term "chancroid." Or the inoculation may occur at the site of a traumatism; for example, where the frenum is slightly torn in coitus, or where the bruised knuckle of the accoucheur is exposed during the practice of his art.

The induration of chancres may precede, accompany, or follow the lesion with which they are associated. The sclerosis may be short-lived, persistent or recurrent, and in this respect may resemble the

chancre itself, which may endure but for a few days, or be in course of full evolution at the date of appearance of so-called "secondary" symptoms.

As a consequence, the ganglia in anatomical connection with the chancre become, with very rare exceptions, enlarged and specifically indurated. With genital chancres there is usually double inguinal adenopathy; with labial chancres, submaxillary adenopathy; with chancres of the eyelid, pre-auricular adenopathy, etc. The glands usually enlarge within a few days after the appearance of the chancre, and remain in that condition for several months. They are indurated on one or on both sides of the body; are freely movable; are unattached to surrounding tissues; are neither painful, tender, nor inflammatory, and they therefore terminate neither by suppuration nor by ulceration. It will thus be evident that the word "chancre" is applicable only to certain features assumed by other lesions, and is not itself descriptive of a lesion differing absolutely from all others. It is indeed clear that there can be no particular chancre-lesion, since in turn the macule, vesicle, pustule, papule, tubercle, erosion, vegetation, ulcer, and fissure may each become a chancre. Every other elementary lesion of the skin, therefore, may assume the chancrous features; in other words, may display in its morbid career the modality of syphilis. These chancrous features are: infection; sclerosis after an incubative period; coincident or consequent adenopathy (sclerosis of neighboring ganglia); and, after a second incubative period, the occurrence of the symptoms of general syphilis. The last-named is, of course, an historical feature, not recognizable during the greater part of the life of most chancres.

The minor chancrous features are less constant and trustworthy. Chancres of the skin may be deeply pigmented. Some are painful from the occurrence of inflammation; some are injured by traumatism (chancre of the nipple in nursing-women); some, by irritants (caustic improperly applied); some, finally, are so insignificant in feature (chancre of the vagina) that even the expert is readily deceived in their recognition.

With or without involution and complete disappearance of the chancre, the symptoms of general syphilis occur only after a so-called "second period of incubation." This period extends usually from between the end of the first to the end of the second month after the appearance of the chancre, the average being between the fortieth and the forty-fifth day. During this period the general condition of the patient is that which, by subjective and objective phenomena, displays signals of the approaching distress of the economy. There are anæmia, and, in cases, even chloro-anæmia; wandering pains, substernal or about the articulations; a cachectic appearance; engorgement of the superficial and deep ganglia; occasionally a well-marked febrile process, the so-called "syphilitic fever"; and a special irritability of the skin and mucous membranes.

The so-called "periods of incubation" in syphilis do not, however, really exist. The words used to define them refer to periods of time in which, upon gross inspection, the evolution of the disease does not seem to be in progress, but in the course of which there is ample evidence that

there is a gradual involvement of one portion of the body after another. Thus, in the "second incubative period" of the text-books careful examination of a patient about to display the external manifestations of systemic disease discloses the fact, as suggested above, that the symptoms are by no means latent. The glands of many parts of the body beside those in the vicinity of the initial sclerosis become tumid and at times painful, including the tonsils and thyroid gland. The skin may exhibit icteroid symptoms as a result of hepatic disturbance; the excretion of urea may be augmented or albumin may temporarily appear in the urine; pains in the head, limbs, and other parts of the body may produce distress even of a severe grade; the leucocytes may relatively increase in number; the joints may become painful and swollen; and muscular contracture with many other evidences of a morbid state of the system may indicate to the careful observer that a general process of intoxication is in more or less rapid evolution.

At this moment, the "second incubative period" of the disease being completed, the patient is ready for an "explosion" of general syphilis. Insidiously or suddenly, first noticed upon the skin beneath the clothing, with rapid efflorescence over the entire body-surface after a hot bath, the stimulus of liquor, or the excitement of the dance, appear the syphilodermata or syphilides or skin-symptoms of syphilis.

SYPHILODERMATA (SYPHILIDES).

The skin-manifestations of syphilis are of common occurrence, are numerous as to their forms, and are of the greatest importance from a diagnostic point of view.

As in syphilis of other organs, that of the skin is betrayed in symptoms like and unlike those of non-syphilitic affections. The study of these differences is here also a study of the syphilitic mode of disease. In a treatise of this scope and these limitations it will be practicable to describe merely those evidences of the syphilitic process to be recognized in the integument.

Lesions of the skin appear in syphilitic individuals of both sexes, in all periods of life, and in all stages of the disease. These symptoms are, however, much more frequent during the first two years after infection, subsequent to which period the symptoms of the disease are more commonly betrayed in subcutaneous lesions, or lesions which affect the viscera, and the osseous, nervous, muscular, and vascular systems.

General Characteristics of the Syphilodermata.—The syphilodermata, like chancres, are, properly speaking, modalities of such symptoms as occur in diseases not syphilitic. The distinctive difference between the papules, ulcers, and other lesions of syphilis and those of lupus, for example, lies chiefly in the mode of evolution and involution. It is the syphilitic behavior, rather than the syphilitic lesion, which guides the diagnostician. The syphilides, in short, resemble the lesions of most of the other diseases of the skin, and they differ also in various degrees from each one of the latter. Hence is seen the importance of a clear recognition of their general characteristics.

ABSENCE OF SUBJECTIVE SENSATIONS.—The eruptions produced by

syphilis are rarely attended by itching, burning, or painful sensations of any sort. This absence is frequently a positive aid in establishing a diagnosis, and, as a rule, is the more valuable the graver the lesion. Great difference, however, will be noted in this respect between different individuals. Occasionally considerable itching will be induced, as in condylomata of the anus; and syphilitic ulcers, especially of the leg, may be productive of severe pain. At the same time it is a common experience to find a patient quite tranquil as regards all subjective symptoms, covered from head to foot with a brilliant macular syphiloderm, or exhibiting with the utmost composure a large number of serpiginous ulcerations on his scalp and extremities.

POLYMORPHISM, a term used to designate the coincident appearance of lesions of various character upon one individual, is as true of syphilis as of other diseases, such as lepra and scabies. Viewing the cutaneous and other symptoms of syphilis as a whole, this feature is strikingly significant, as it is possible to observe at one and the same time, upon the body of a single infected individual symptoms indicative of pathological changes in the skin, mucous membranes, hair, nails, lymphatic glands, and periosteum.

To a less marked degree is this true of the syphilodermata. The type of syphilitic skin-lesions is generally papular, and such lesions may originate from macules, enlarge into tubercles, or degenerate into ulcers. The simultaneous coexistence of several of these forms is due to their chronicity, to their tendency to recurrence, and to the changes which they undergo.

CAREER.—The historical course of the syphilides suggests certain common features. They are rarely accompanied by local inflammation, and, with the exception of syphilitic fever, are usually unattended with pyrexia or with malaise. The tolerance by the general economy of an extensively developed syphiloderm is highly significant of specific infection. Again, though generally described as a chronic disease, syphilis is, judged with respect merely to time, much more acute than several other maladies. The syphilides have a distinct career, pursuing, even when untreated, a natural process of evolution and involution, and few, save those upon the lower extremities where the force of gravity is an important element in the fixation of all local disease, persist in unvarying type for any lengthened period of time. One lesion often succeeds another by development or by degeneration; and many of the untreated syphilides disappear without leaving relics of their existence upon the surface of the skin. In these last-named particulars syphilitic cutaneous manifestations are singularly different from those of lupus and of carcinoma, for example, where the lesion is usually of one type, and persists in one location for a period of time during which a syphilide would have progressed either to much more extensive damage or to permanent repair.

COLOR.—There is no color peculiar to the syphilodermata that may not be seen in other diseases of the skin. It is important to recognize this fact clearly, as there are those who claim to diagnosticate the syphilides by their hue alone. The color, however, considered in connection with the other features of the syphilides, is highly char-

acteristic, and often is sufficient to enable one at a glance to identify the disease. These color-shades are usually less brilliant than those seen in other dermatoses, and they possess less of the scarlet and pink quality. They are admixtures of red, yellow, and brown in various proportions, frequently with a slight preponderance of the brown. They have been compared with the color of raw ham and with that of copper, hues which unfortunately have been so associated with the syphilides that the non-recognition of such tints has led to many errors in diagnosis. Pigmentation in various shades of chocolate, coffee, and black is recognized, both during the evolution and after completion of involution of the syphilodermata. In cases in which there has been no luetic affection the color, as in syphilis, is due to increase of pigment in the part, both with and without extravasation of blood. Recent syphilitic scars are usually pigmented both in centre and at the periphery. In these, again, it is not so much the color as it is the scar *with* the color that gives special significance to such lesion-relics.

CONTOUR.—In syphilis the contour of single elementary cutaneous lesions, as also of a group of aggregated lesions, is usually circular, or there is a distinct tendency to assume such a configuration. Thus, it is common to find outlines of patches, ulcers, and scars observing the curve of a segment of a circle, and the coalescence of several such lesions tends to produce the serpiginous aspect. Figures resembling a horseshoe, a kidney, a half-moon, the letter S, and a dumb-bell are thus produced. The earlier exanthems of syphilis are usually symmetrical, the latter asymmetrical. Even symmetrically distributed eruptions will at times occur in annular patches, made up of maculopapular lesions arranged in a circular or a crescentic line. Patches of syphilitic eruption will often clear at the centre and develop or spread at the circumference of a circle.

SITE.—No portion of the skin is free from the possibility of invasion by syphilis. The disease may involve at once almost the entire integument; or it may rapidly spread from point to point, having covered finally a large area; or it may appear conspicuously at distant and isolated points of limited extent; or, finally, it may be manifested exclusively in an insignificant lesion or a group of lesions, ephemeral in course and limited to one portion of the body. The site of a syphilitic eruption may be determined apparently by the capriciousness of the disease, and yet result from local irritation of the skin of infected individuals. The accumulations on the napkins of women invite the occurrence of labial condylomata; the lips of the infant, after contact with the nipple of the mother, become the seat of rhagades and fissures; while the tongue of the tobacco-chewer and the fauces of the tobacco-smoker acknowledge special sources of mischief.

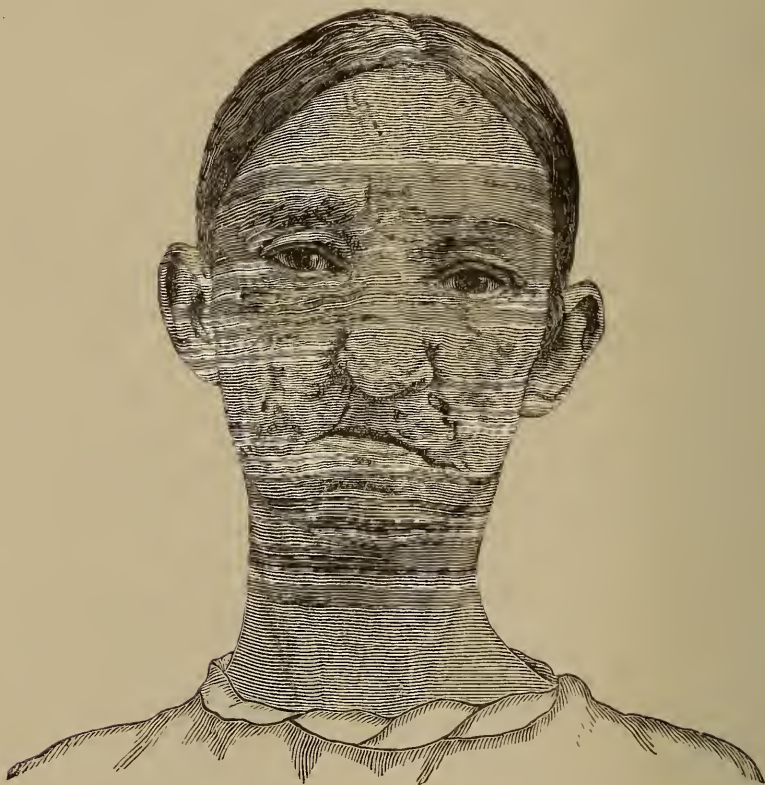
There are some sites of preference for special lesions, as, for example, the squamous syphiloderm of the palms and soles; and the papules of the forehead, constituting the so-called “corona veneris.”

AMENABILITY TO TREATMENT.—Mercury possesses a singular influence upon the syphilodermata that is promptly perceived when the drug is internally administered. This singularity rests upon the broad fact

that the lesions of many other cutaneous diseases not only refuse to acknowledge the benefit of such medication, but in many cases are even aggravated by it. The importance of clearly recognizing the character of each cutaneous disorder submitted to treatment is thus well illustrated.

CHARACTER OF SPECIAL LESIONS.—Certain families of symptoms in syphilis exhibit characteristic features. Thus, some papular lesions are surrounded at the base by a peculiar fraying of the epidermis, in consequence of which they are encircled by a little fringe of scales resembling in shape a collar. The scales of syphilis are usually not abundant, but are fine, dirty whitish or occasionally brownish in color. The

FIG. 72.



Facial cicatrices of tubercular syphilodermata after twenty-five years of infection.

crusts of syphilis are apt to be bulky, greenish black in hue, and to surmount secreting ulcers of various depths. Such ulcers are generally circular, or they exhibit in contour a tendency to assume the circular line, while the cicatrices by which they are succeeded have a similar configuration. The scars of syphilis are frequently smooth, delicate, very slightly depressed, unattached to subjacent tissues, and pigmented. Lastly, from several of the secreting lesions of syphilis, especially those upon and about the anogenital region, proceeds a discharge having an offensive odor and capable of communicating the disease to a sound individual.

SUBJECTION TO EXTERNAL AGENTS CAPABLE OF EXERTING AN INFLUENCE UPON NON-SYPHILITIC ERUPTIONS.—It is an obvious

error to conclude that the exanthemata of syphilis are produced exclusively by the operation of a systemic intoxication. Many of the pustular syphilodermata are the result solely of pyogenic cocci, and the extension of the eruption may be by inoculation and auto-inoculation. This fact is shown not merely by the ordinary methods of demonstration, but also by the clinical fact that these lesions are far more frequently encountered among the filthy, the neglected, and the ignorant. Often syphilodermata are commingled with seborrhœic and eczematous affections. It is not rare to find patients applying for relief in clinical practice who exhibit lesions of syphilis commingled with traces of the incursions of lice and bugs, urticarial wheals, scratch-marks, and forms of keratosis pilaris, due to the unwashed condition of the skin.

Syphiloderma Maculosum.—The cutaneous lesions of syphilis, limited to color-changes in more or less circumscribed areas of the skin, are exhibited in two distinct forms, due respectively to anomalies in blood-supply and pigment-distribution.

SYPHILODERMA MACULOSUM DUE TO HYPERÆMIA (ERYTHEMATOUS SYPHILIDE, SYPHILITIC ROSEOLA).—This form of macular syphiloderm is the earliest expression of systemic cutaneous syphilis, and is more or less constant of occurrence, differing in this respect from several of the other syphilides. It is often unnoticed by the patient, whose attention may first be called to it after its recognition by the skilled eye of another. It occurs in coffee-bean- to filbert-sized macules, roundish, oval-shaped, or of irregular contour, and varying in color from a light rosy to a dull mulberry hue. In some cases these markings of the skin-surface are very indistinct, requiring for their recognition the closest scrutiny in a clear light, and occasionally even then leaving uncertainty in the mind of the expert. With a lens tinted in cobalt-blue they may be recognized at an earlier date than if viewed with the unaided eye. At times they constitute an irregular "marbling" of the surface, of a kind which renders it difficult to define with the eye the individual lesions composing the eruption, while the general visual effect of the exanthem is distinct. The spots are not elevated above the general level of the integument, but may change in type, a papular lesion developing later in the same site.

Like all macules of the skin due to vascular changes, those of syphilis vary in color with the complexion of the individual, with the time which elapses after their first appearance, and with vascular changes in the superficial plexus of blood-vessels. Thus, the deeper shades are usually observed in thick and muddy-tinted skins; the more delicate tints upon the breast, for example, of blonde women.

The eruption usually appears between the sixth and the eighth week after the appearance of the initial sclerosis, and, when untreated, develops for about one week more. It persists for a variable period of time, depending upon the severity of the constitutional disorder and the treatment to which the patient is subjected. During the early part of its career the hue of the lesions is lighter, and they may be made to disappear under pressure of the finger; later, they are more deeply stained, and, exudation having occurred, the color of the spot

does not disappear under pressure. When involution is in progress there is a slow disappearance of the eruption, which gradually fades from view. The vascular changes in the capillaries occasioned by cold, heat, and rapid cardiac contractions, influence the eruption to a marked degree. A hot bath, a dance, a glass of spirits, a fit of excessive coughing, laughter, etc., may all bring the lesions into prominence.

The eruption may be limited to the skin of the belly, extending sparsely over the chest, the loins, the anogenital regions, and the thighs; may develop over the palms, soles, forearms, and legs; or, in exceptional cases, may profusely cover the entire surface of the body (face, ears, dorsal surfaces of the hands and feet, and skin of the penis with the pro genital region). In the milder forms it is evidently susceptible to external irritation of the skin, as it is common at the wrists where a starched cuff is worn, over the brow in the line in contact with the hatband, and is particularly well developed in men where the trousers are "reinforced" (perineum and inner faces of the thighs).

At times, as in the exanthematous fevers, the eruption is preceded by a febrile state, with marked amelioration of symptoms when the rash is fully developed; while, again, it is throughout accompanied by slight rise in the body-temperature, the patient having the so-called "bilious" appearance—muddy complexion, coated tongue, icteroid hue of conjunctivæ, and offensive condition of the breath. Wandering pains in the extremities, and especially beneath the sternum, are frequently experienced. The last-mentioned symptom is highly significant, and the whole condition is probably due to the effect upon the nervous system of the circulation of the recently intoxicated blood. These pains are not those produced later in the periosteal and other complications of the disease, and are the more significant as the eruption itself is productive of a scarcely appreciable subjective sensation. The superficial ganglia of the body are usually engorged at the same time; the fauces are congested; the hairs of the scalp are slightly loosened in their follicles, and in the latter region in severe cases papules and pustules may form. Inasmuch as the order of sequence of most of the phenomena in syphilis is subject to a singular inversion, it occasionally happens that there is concomitance of later signs of the disease, such as iritis, affection of the nails and bones, or even, in special regions, of pustular, papular, or squamous syphilodermata.

Much less rare is the survival of the initial sclerosis to the date of this efflorescence. This point is of considerable importance. The physician should never conclude the examination of a patient complaining of suspicious genital lesions without carefully exploring the surface of the trunk, and also never pronounce upon an exanthem of this sort without minute inspection and palpation of the part where an initial sclerosis may exist. In a diagnostic and therapeutic sense the information thus gained may be precious, and in a large proportion of all cases is of a kind hidden from the knowledge of the patient.

Relapses occur in certain cases with limitation of the disease to parts previously affected or unaffected. At the end of the first twelve months recrudescence of larger macules in annular groups may occur. Exceptional forms are noted in which darker puncta appear in the

macular lesion, occasionally traversed by a hair. These puncta are localizations of a more intensely hyperæmic or exudative condition about the orifices of the ducts of the follicles.

The diagnosis of this syphiloderm is readily established in view of its essentially symptomatic character. From scarlatina, measles, and rōtheln it differs in the indolence of the rash, the absence of decided elevation of body-temperature, and the order of its appearance in different portions of the body, as it rarely occurs first upon the face. Urticaria and the rashes induced by the ingestion of copaiba and other medicaments are distinguished by the marked itching of the affected surface and by their very general diffusion over the entire body, a condition rarely observed in the syphiloderm. Tinea versicolor, usually limited to the anterior surface of the trunk, is characterized by a fawn-colored to a chocolate-colored tint, by the furfuraceous desquamation which the patient usually describes as most noticeable after a hot bath, and by the existence of the readily recognized vegetable parasites upon the scales scraped from the affected surface. Tinea versicolor is, moreover, of much longer duration than a syphiloderm, and almost never extends to the exposed parts of the body—the face and the hands. Ringworm of the skin of the body is not symmetrical, and is a parasitic disease.

All these distinctions, however, are not to be compared in diagnostic value with the concomitant symptoms of syphilis that are very generally present, such as adenopathy, persistence of the initial sclerosis, and evident involvement of other than cutaneous tissues. Such concomitant symptoms will be found occasionally with a non-syphilitic eruption due to drugs ingested for relief of the infectious disease. The most common of these drugs is potassium iodide; the eruptions it produces are frequently found both commingled with the macular syphiloderm and occurring on the eve of the appearance of the latter. The existence of acneiform lesions upon the face, the neck, and the posterior surface of the trunk, a vivid erythema of the forearms, including the hands, and purpura-like maculations of the face, legs, and feet, should never mislead the physician as to the character of the disorder with which he is confronted. It is undeveloped syphilis with a dermatitis medicamentosa of the surface. Suspension of the iodide, which drug fortunately is not required in the majority of cases; the use of a properly selected mercurial, or even (and this is often wise) abstention from all medication, will be succeeded by disappearance of the cutaneous lesions, which may be followed later by a mild macular syphiloderm, altogether insignificant in comparison with the eruption artificially induced.

SYPHILODERMA MACULOSUM DUE TO ANOMALOUS DISTRIBUTION OF PIGMENT (PIGMENTARY SYPHILIDE).—This eruption, if it may be so called, is occasioned by the appearance upon the body-surface of irregularly circular, usually poorly defined, dirty-brown and chocolate-tinted macules, which, as they are unconnected with vascular changes, do not disappear under pressure. The lesions occur as sparse, well-isolated discolorations, or, more commonly after a species of confluence, as an irregular rete or network, with relatively large interspaces characterized by an absence of coloration. The eruption is most

common upon the sides of the neck, the shoulders, and breasts of blonde women, though it may more rarely involve the surface of the trunk and the extremities. It is often recognized, however, among Anglo-Saxons of brunette type, and also among negroes, mulattoes, Indians, and persons of the Mongolian race. It is most frequent during the first year after infection, though it may develop later.

It occurs (*a*) as a sequel to a macular or maculo-papular syphiloderma over the parts described above; and (*b*) *ab origine*, as a pigment-disorder, probably under the same influences as those productive of the chloasmata of symptomatic origin (chloasma uterinum, cachecticorum, etc.).

The color-changes observed in the skin are explained by the occurrence: first, of pigmentary deposits, chiefly at the centre of the ordinary macular or papular syphiloderma; secondly, of peripheral absorption of such pigment-deposit with possible persistence of it for a variable time at the centre of the lesion; thirdly, of total absorption of all pigment from the original lesion; and lastly, of peripheral hyperpigmentation of the spaces intermediate between the original macules.

The eruption is an epiphenomenon of the syphilitic process, being not amenable to the treatment under which other macular syphilodermata speedily disappear, and is an expression rather of general deterioration of the health of the skin than of specific disease.

The eruption is liable to be mistaken for that condition in which there is simply an accumulation, upon a somewhat greasy skin, of secretions and dust, to be seen upon an integument long unwashed. Tinea versicolor has a more yellowish or fawn-colored tint, and is more abundantly developed upon the front of the chest than upon the neck. Neither vitiligo nor leucoderma is symmetrically disposed, as is usually the case with the pigmentary macular syphiloderma.

Syphiloderma Papulosum.—The type of all cutaneous lesions produced by syphilis is to be recognized in the papule. Most of the other lesions are either developed from it, transformed to it, or by reversion or admixture confess that the neoplasm of syphilis in the skin is essentially a more or less solid circumscribed cutaneous lesion, varying as to size and history.

Papules occurring in syphilis may appear as the first cutaneous evidence of infection, or they may be developed from earlier macules. They may be small, large, acuminate, flat, disseminated, or in groups.

SMALL ACUMINATE MILIARY PAPULAR SYPHILODERM.—In this eruption the lesions are millet-seed- to hemp-seed-sized, circumscribed, globular, acuminate, reddish and salmon-reddish, firm elevations of the surface, or minute nodules upon the skin, generally symmetrically developed, often over the entire body, closely set and occasionally grouped in crescentic figures. When viewed with care a minute vesicle, a pustule, or a scale may often be detected at the conical apex of each papule, the vesicular or pustular lesions rarely developing to such an extent as to become a characteristic feature of the eruption. The color is at first, especially in blonde skins, a species of salmon and red mixed; later, the darker and browner shades appear. When

generalized the eruption is well developed, especially over the posterior surface of the body, the occipito-cervical and scapular regions, the buttocks, and the calves of the legs, though it is often distinct about the anus and the genitalia. Like several other of the syphilodermata, its earlier are more symmetrical than its later manifestations, whether these be tardy or relapsing, or both. The involution occurs by resorption of the plastic exudate, minute and usually scanty, dirty-whitish scales encircling the base of each lesion. When the eruption has proved especially persistent, marked pigmentation follows in the form of brownish-red blotches, the centre of each of which displays a cicatriciform relic in the form of a punctum.

The eruption is often first noticed about the forehead, nose, mouth, and neck, localities commonly subject to topical irritation. Thus, about the forehead in men the papules will frequently be arranged along the surface pressed by the lining of the hat; and frequent fingering of the face, shaving, and irritation by the edge of the collar of the shirt may determine a more speedy efflorescence at the sites of contact. About the mouth tobacco plays the part of an excitant; about the nose a localized seborrhœa may be added to the syphilitic phenomena, in which case the lesions may be covered with thin greasy crusts. The eruption is common during the first six months after infection, and is usually fully developed after a fortnight when no treatment has influenced its evolution. When the lesions are perforated by hairs they suggest on superficial examination a resemblance to keratosis pilaris; and when aggregated in patches of distinct contour they may be confounded with psoriasis or squamous eczema. But in every case the general physiognomy of the disease may well be trusted for the establishment of a diagnosis, having in mind the color, the absence of intense pruritus and serous exudation, the disposition over the body as a whole or in portions widely separated, and the rarely failing concomitant evidence of syphilitic infection.

LARGE ACUMINATE PAPULAR SYPHILODERM.—Lesions of the character above described occasionally develop to an unusual extent, attaining the size of that of a coffee-bean in localities where the apex of each lesion is free to push forward without coming into contact with adjacent planes of the integument. Thus, about the dorsum of the body, the gluteal regions, the calves of the legs, and the extensor surfaces of the forearms, fully developed, slightly scale-capped or scale-encircled, and grouped papules may appear, often commingled with pustules and superficial ulcers, the polymorphic patch having a figure-of-eight or S-shaped outline. These patches are often displayed by patients under treatment the influence of which has interfered with the full evolution of the disease.

SMALL FLAT PAPULAR SYPHILODERM.—The lesions recognized under this title differ from those just described in that they are not acuminate, but are distinctly flattened at the apex, this flattening being at times so pronounced that each lesion resembles a small button or a plaque, the contour being roundish or oval-shaped. The lesions are frequently encountered on the face, especially near the mucous outlets, over the anterior and posterior surfaces of the trunk, and on the flexor

aspects of the extremities. The palms of the hands are often affected. In color the papules exhibit the variation usual in individuals of different complexions, and in the same individual as they are related to the condition of the circulation. Thus, on the face a scarcely distinguishable pink will become a deep, lurid, reddish brown from an attack of sneezing, a paroxysm of laughter or of rage, and from violent exercise. The seborrhœic condition noted on the face in the acuminate lesions is also occasionally seen about the plaques. The same is true of the scaling described above. The eruption is much less copious, as a rule, than with other forms of syphilitic papules, due doubtless to the fact of its frequent occurrence in those subjected to treatment. The papule differs from the lesion about to be described with respect to its size, being rarely larger than small buttons; while the largest papules of the same variety may attain the size of large coins. The diagnosis has already been suggested.

LARGE FLAT PAPULAR SYPHILODERM.—Here the resemblance of the papule to a button is even more distinct, the lesion occurring with a well-defined, firm, raised border, and a shallow depression in the centre, though at times, especially in moist situations, the superficies of each plaque is a smooth, flat plane. The large papules commonly begin as macular lesions and rapidly develop at the periphery, this development often corresponding with centric involution, by which the shallow depression described above is reduced to the level of the adjacent skin and the lesion is transformed into a ring. In shape the papules are circular and oval; in size they vary from that of a finger-nail to that of a pigeon's egg. They have the usual variation in color, and may scale at the edge, or over the flat top or the depressed centre. In moist situations they frequently secrete a muco-purulent fluid which is smeared over the papules and adjacent integument, and which, in the vicinity of the anus or genitals, exhales an offensive odor. It is especially in such situations that flat papules of the type described occasionally degenerate by fissure or by circular ulceration. **CONDYLOMATA LATA** are flat and secreting papules of the regions named, which have a whitish appearance in consequence of the mucoid secretion with which they are smeared, and which are transformed by the influence of heat, moisture, and either friction or apposition of contiguous integumentary folds.

Papular syphilodermata may become generalized or be limited to certain sites of preference, as the face, the neck, the flexor surfaces of the extremities, and the anogenital region. The eruption is either an early, a late, or an intermediate symptom of syphilis, occurring most abundantly in young and delicate skins, where the disease has been ignored and therefore untreated; and most scantily in the thicker integument peculiar to middle life, where prompt resort has been had to appropriate medication.

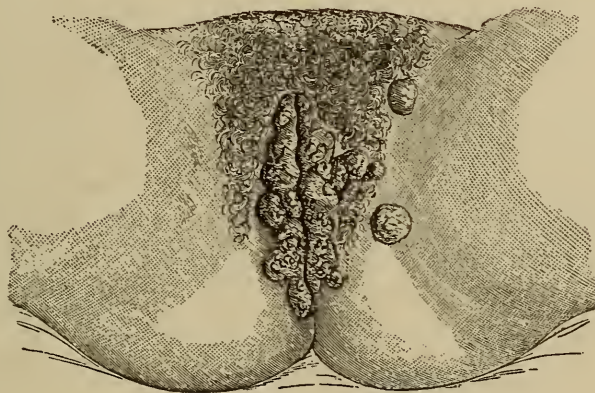
Syphilitic papules undergo a series of modifications under the influence of various causes which may be enumerated as follows:

(a) There is considerable hyperplasia of the cutaneous elements (papillary layer of the corium, rete, and blood-vessels), by which the papule becomes largely raised from the surface, so as to resemble a papilloma, wart, or the lesions characteristic of frambœsia. In this

way, rarely, a portion or the entire surface of the body may be covered with light-red or violaceous-red, non-ulcerative, vegetating growths. They secrete freely, and the discharge is liable to concrete into crusts and to exhale an offensive odor.

(b) There is considerable hyperplasia of the elements, in consequence of which the lesions spread laterally, while their elevation from the surface is prevented by contact with apposed surfaces. Thus is formed the broad, flat, moist papule known as the "vegetating mucous patch," "condyloma," *plaque muqueuse*, etc. (Fig. 73). The lesions, when unaltered and fully developed, are of a whitish color in consequence of the puriform mucus which covers them, and which, as with so many of the syphilodermata in moist situations, is liable to exhale an offensive odor. When the secretion is removed the lesion is seen to be pinkish, or light or dark red in color, and to be either firm or soft, scarcely raised, and indefinite in contour, or distinctly elevated

FIG. 73.



Vegetating condylomata of the vulva. (After JULLIEN.)

and well defined. Condylomata are chiefly found in moist situations where folds of the skin are apposed, as about the perineum, the groins, the axillæ, the mammæ, the nates, the anus, the genitals, and the inner faces of the thighs. They may coalesce to form palm-sized patches; and frequently they are associated with hyperidrosis, seborrhœa oleosa, and the dried products of secretion from the adjacent mucous outlets.

(c) In consequence of changes in the superficial layers of the epidermis the papules may become covered with scales, either at the base or the apex, more commonly the latter, forming thus the papulo-squamous syphiloderm. The scales are of a dirty-grayish hue, often desiccated, generally attached, rarely freely exfoliating. They are relatively few, occurring where the lesions are closely set. The desquamation may be the most suggestive feature of the patch. Beneath the scales are seen distinctly elevated brownish-red papules or merely slightly elevated, dull-red or purplish-red maculations. When the scales accumulate at the base of the papule they tend to surround it with a circlet or collarette of exfoliated shreds of epidermis.

PALMAR AND PLANTAR SYPHILIDES.—In consequence of the thickness of the epidermis in the palms and soles the papular or papulo-

squamous syphiloderm of these regions is presented under somewhat atypical forms. The dense stratum corneum of the epidermis in the palms and soles is not readily raised from its underlying tissue into papular forms. The pathological manifestations of this disease are rather displayed in thickenings, separations, stainings, and frayings.

Here, therefore, are seen dull-red maculations, covered throughout, or merely at the edges, by scales or epidermal shreds; minute, firm, corneous thickenings, few or many, often without color in consequence of the depth of the blood-vessels beneath the opaque horny layer; and distinctly elevated (not flattened) and circumscribed papules, of the usual livid-red color, coffee-bean- to small-nut-sized, often aggregated in patches having a tendency to assume the circinate outline. Occasionally with a pointed instrument pinhead-sized and larger deposits resembling chalk may be pried from circular beds in the palms and soles where the lesions first developed. These and similar spots are often covered with dirty-whitish, often tenacious, half-loosened, epidermic flakes which are characteristic. In other cases, usually in consequence of the motions of the hand or the foot, or the exigencies of toil, irregular angular losses of epidermis occur resembling the fracture of a pane of glass. The attached portions of the epidermis project at the edges only, over deep fissures, broad exulcerations, or a ham-red, tender, and newly formed epidermic stratum.

The eruption is frequently symmetrical in the centre of both the palms and the soles, but is rarely found upon the dorsum of the hands and the feet, and then never developed typically, but always by extension from the palmar or plantar regions; it is also seen on the lateral surfaces of the hands, feet, fingers, and toes, as well as over the wrists and ankles. The exanthem is a persistent, rebellious, and usually late cutaneous symptom of syphilis, occurring often six, eight, and more years after infection. Rarely it is seen within a few months after the existence of chancre, and is then usually manifested in its simpler forms.

The papulo-squamous syphiloderm bears in many instances a strong resemblance to the patches of psoriasis, but it can usually readily be distinguished from the latter by a consideration of the following points:

The syphilide, as a rule, is not generally diffused; it displays symmetry only when it involves the palms and soles, and then not invariably; it is elevated at the border of the patch; and it observes the contour of the segment of a circle. Psoriasis is more widely diffused; is generally symmetrical; does not specially exhibit elevation at the border of the patches, and the latter are rather more completely than partially circular in outline. In syphilis there is generally a history of infection, of other cutaneous or mucous symptoms of the disease, and, in married women, of abortions, miscarriages, or births of diseased children, all of which symptoms are wanting in psoriasis. In psoriasis there is a decided predisposition to the development of the disease about the extensor surfaces of the joints and the posterior aspect of the trunk; the syphiloderm, though it may occupy these situations, can rarely be found thus displayed when other surfaces are spared. The scales in psoriasis are more lustrous, are more freely pro-

duced and shed, and they exist significantly at an earlier period of the exanthem. With only such exceptions as prove the rule, psoriasis is never strictly limited to the regions of the palms and soles. A scaling palmar or plantar disease of the skin in childhood is more likely to be psoriatic, though both diseases are seen in the early periods of puberty.

Eczema is yet more readily recognized by its severe itching, its history of discharge and moisture, and its characteristic crusts. Ancient patches of squamous eczema are often very indeterminate in outline; they do not ulcerate, and they exhibit scales on the surface of a much more deeply infiltrated area. Eczema of the palms and soles, when chronic, usually involves also the dorsum of the hands and the feet. When this is not the case the eczematous infiltration, if of long duration, will in the vast majority of all cases be found to involve uniformly and evenly the entire palm or sole, including the palmar or the plantar faces of the digits. Eczema, finally, is much more frequently encountered solely upon the right hand in right-handed patients, or to a greater extent in that organ by reason of its preference in the performance of function. This is less common in syphilis.

Syphiloderma Vesiculosum.—Vesicular syphilodermata are either the rarest of all cutaneous symptoms of syphilis or they do not actually exist. Certain French authors describe pinhead- to pea-sized, conical, globoid or umbilicated, isolated or grouped, and crusting elevations of the epidermis, with lucid or cloudy contents, seated upon the face and the genitalia. The eruption is described as an early syphiloderm, often exhibiting a halo of characteristic tint, the resulting crusts being granular and somewhat lighter in color than those commonly seen in the disease. Both small and large vesicles have thus been assigned to the disease.

But the larger number of the lesions are, without question, either immature pustules, eczematous lesions in syphilitic subjects, or pure accidents of the syphilitic process. With regard to the first, it may be said that the pustular syphiloderm not rarely begins as a vesicular lesion; with regard to the second, that coincidence of so common a disease as syphilis with other cutaneous disorders is a matter of frequent observation; and with regard to the third, bearing in mind the large quantity of potassium iodide swallowed for the relief of the disease and its capability of exciting a vesicular eruption, it can reasonably be concluded that some, at least, of the cases of so-called "vesicular syphilis" have imperfectly been studied.

Syphiloderma Pustulosum.—In some of the pustular syphilodermata the pus is neutral; in others the staphylococcus pyogenes aureus and albus are present. The larger number of all pustular affections of the skin, whether in syphilitic or in non-syphilitic subjects, are the results of infection with pus-cocci. It is therefore not sufficient in syphilis to pronounce upon the question of infection only. It is necessary further to explain many of the external phenomena of the disease by the accidents to which non-syphilitic patients are subject.

These accidents are probably of more frequent occurrence in pustular syphilodermata than in any other lesions exhibited in the disease. Viewed as a whole, it is noticeable that pustules occur for the most part in dispensary and hospital practice, among the impoverished, the filthy, the ill-housed, and the poorly treated. They are decidedly rare in the *clientèle* of the physician consulted chiefly by those who are cleanly, well-nourished, and skilfully treated. If it were possible to keep the skin of the syphilitic subject aseptic during the management of the disease, no one would expect an evolution of pustular syphilodermata at any time throughout its course. The lesions described under this title may therefore be regarded for the most part as due to the causes suggested above, aided by picking and scratching the skin to an extent capable of distributing staphylococci over its surface. In other cases it cannot be denied that pustules, general of evolution and characteristic in appearance, may develop in consequence of luetic infection only; but even of this type they are rarely to be seen in the better class of patients.

Pustular lesions in syphilis further present a wide range of differences. They may vary in size from that of a pinhead to that of a finger-nail; they may be acuminate, flat, hemispherical, or irregular in shape; they may be few or be very numerous; they may be distinctly localized or be generally dispersed; they may be grouped or be disseminated; and they may occur from the first as minute vesico-pustules or as pustular transformations of variously sized papules. They may be surrounded by inflammatory areolæ, or may spring from an unaltered integument, or be subepidermic in situation, and scarcely project from the surface. They may be seated upon superficial or deep, or sharply cut, secretory ulcers, and they are usually covered with crusts differing in bulk and consistency, forming thus the pustulo-crustaceous syphilide. According to the depth of the ulceration at the base are they followed by cicatrices. Pigmentation is a frequent result. The crusts which form by the desiccation of pus are usually reddish brown to greenish black in hue; they occur in strata or laminae by accretions from beneath, and, even when superimposed upon a moist and secreting ulcer, they are adherent at the edges. They may occur early or late in the disease, and at either epoch may constitute trifling or grave cutaneous lesions. They have a marked predisposition for involvement of the sebaceous and pilary follicles, and they are frequently disposed about the mucous outlets of the body.

SMALL ACUMINATE PUSTULAR SYPHILODERM.—This exanthem, which is usually largely diffused over an extensive surface, probably represents, as Jullien has suggested, a transformation from papular lesions, due to pus-infection in skins that are usually unclean, irritated, or the seat of diminished vitality. The eruption is certainly rare in patients of the better class. The pustules are generally recognized about the pilo-sebaceous orifices, and upon minute papular lesions, which, as undisguised elements of the eruption, may be interspersed among the latter. The pustules are acuminate and contain each but a droplet of cloudy serum or pus, the desiccation of which furnishes a thin yellowish or reddish-brown crust. The fall of the latter exposes

PLATE XXI.



Large Pustulo-crustaceous Syphiloderm of the Scalp and Body.

the grayish epidermal fringe of the base occasionally seen in papules of similar size.

The lesions may be discrete, confluent, disseminated, or in groups affecting the curve of a circle. The extremities and the trunk are chiefly involved, though the disease may be well-nigh universal. Under the influence of treatment occur minute, punctiform, and pigmented cicatricial atrophic depressions which are not persistent. The eruption may be an early or a late secondary symptom, but usually it is first seen within a few months after infection. Relapses occur when treatment has irregularly been pursued. Frequent concomitants are those symptoms of syphilis proper to the period in which they appear.

LARGE ACUMINATE PUSTULAR SYPHILODERM.—Under this title are classed lesions that are usually coffee-bean-sized pustules, which may spring from macular or smaller pustular lesions, very rarely from an indurated or a papular base. They have a thin roof-wall, occurring by preference where the epidermis is delicate, and they are surrounded by a halo. They are usually acuminate, but they may after full evolution slightly flatten at the apex in consequence of partial collapse. The crusts are bulkier and darker in color than those of the lesions just described; their bases are superficially ulcerated. The pustules form slowly or rapidly, in disseminated or in grouped forms, usually at an early period of the disease, though commonly after the appearance of some syphilide of another type.

SMALL FLAT PUSTULAR SYPHILODERM.—This is a relatively frequent manifestation of syphilis, occurring upon the face, the scalp, the trunk, and the flexor surface of the extremities. The exanthem exhibits a decided tendency to characteristic and circular grouping about the mucous outlets of the body. Such groups are composed of small, flat pustules, originating as reddish, macular lesions which tend to dry into flattish, irregular, adherent crusts. These crusts either exceed the limits of the diseased surface beneath, or are conspicuous upon a dull brownish-red area of inflamed, and at times even of ulcerated aspect.

Often the pustules are so closely set as to become confluent, in which case a single convex crust, like a carapace, will completely cover the involved area. Frequent sites of the exanthem are the regions about the nose and the lips, as also the chin, cheeks, and the anterior faces of the elbow- and wrist-joints.

The eruption is of pustulo-crustaceous type, and it may be evolved from either papular or macular lesions. It is rarely long untreated, and is therefore not often presented for observation when in full evolution. It is usually amenable to judicious treatment; when followed by severe ulceration, destroying an ala of the nose or a part of the lip, the patient has usually suffered from either cachexia or neglect. In these cases less severe phenomena are presented in the superficial serpiginous syphilide, the lesions extending in circinate or annular gyrations about a sound or a previously involved and healed centre. Thus, a circlet of crusts, with underspreading superficial ulceration, perhaps alternating with pustules of various ages and reniform cicatrices, will surround the elbow or traverse the scalp. The resemblance to pustular eczema is at

times suggestive, but the ulceration and outline will aid in their recognition. The lesions are usually late among the earlier symptoms of the disease, but they may be delayed for six months after infection. They indicate, as a rule, either severity of the disease, or, much more commonly, constitutional impairment.

LARGE FLAT PUSTULAR SYPHILODERM.—The lesions classed under this title are fully developed forms of those described above. They originate as usually numerous, maculo-papular lesions, or as nodules or tubercles which gradually deepen into pea-sized and even larger flat pustules, the further history of which is one of enlarging, blood-mixed, reddish- and greenish-brown, also flattish, crusts with underspreading pus-bathed ulceration of varying extent. The superficial variety of this syphiloderm is distinguished from the deep chiefly by the extent of its ulcer, the size of its superimposed crust, and the lighter, dull-red areola which encircles it.

The deep variety, like the superficial, may be limited to the scalp, face, neck, and flexor aspects of the extremities, or it may be much more widely diffused. The entire surface of the body is covered with discrete lesions of this type in cases of unusual neglect or of profound cachexia. The eruption is usually of late occurrence, but in the so-called "galloping syphilis" of the French it may be precocious in development. The lesions are at the onset nodular or tubercular and become transformed into pus. They have each a deep infiltrated base with a dark-brown halo. Incrustation follows with the formation of a conical, roundish, or oval-shaped, blackish-brown crust, beneath which lies a clean-cut ulcer, the sharp edges of which are usually exactly roofed by the incrustation. The crust thickens by concretions from the foul and purulent ulcer beneath, and spreads at the periphery while it thickens in the centre. In this way the appearance of the stratified crust resembles that of an oyster-shell, a condition described by some authors as *RUPIA*, a term once employed as the name of a disease. The ulcer, exposed after removal of the crust, is of characteristic syphilitic type in its deep base, foul floor, clean-cut edges, and purulent secretion commingled with blood, at times attaining a diameter of several inches, and having a circular, reniform, or horseshoe-shaped contour. The degree of destruction it may produce is inversely proportioned to the constitutional vigor of the subject and the treatment pursued. It is usually a grave and may be a malignant exanthem, though under favorable circumstances it is amenable to judicious treatment, and may be an early, though oftener it is a late symptom of the disease. The pigmented scars left are characteristic and indelible.

Syphiloderma Bullosum.—Bullæ in acquired syphilis are late and relatively rare lesions. They are pea- to large-nut-sized elevations of the epidermis, filled at first with a cloudy serum, which is soon transformed into pus, often mingled with blood. They have usually a characteristic halo about the periphery; are roundish or oval in contour; are usually discrete, rarely disseminated; and after development they produce characteristic crusts with underlying ulcers, identical in features with the rupioid sequels of large syphilitic pustules. The eruption

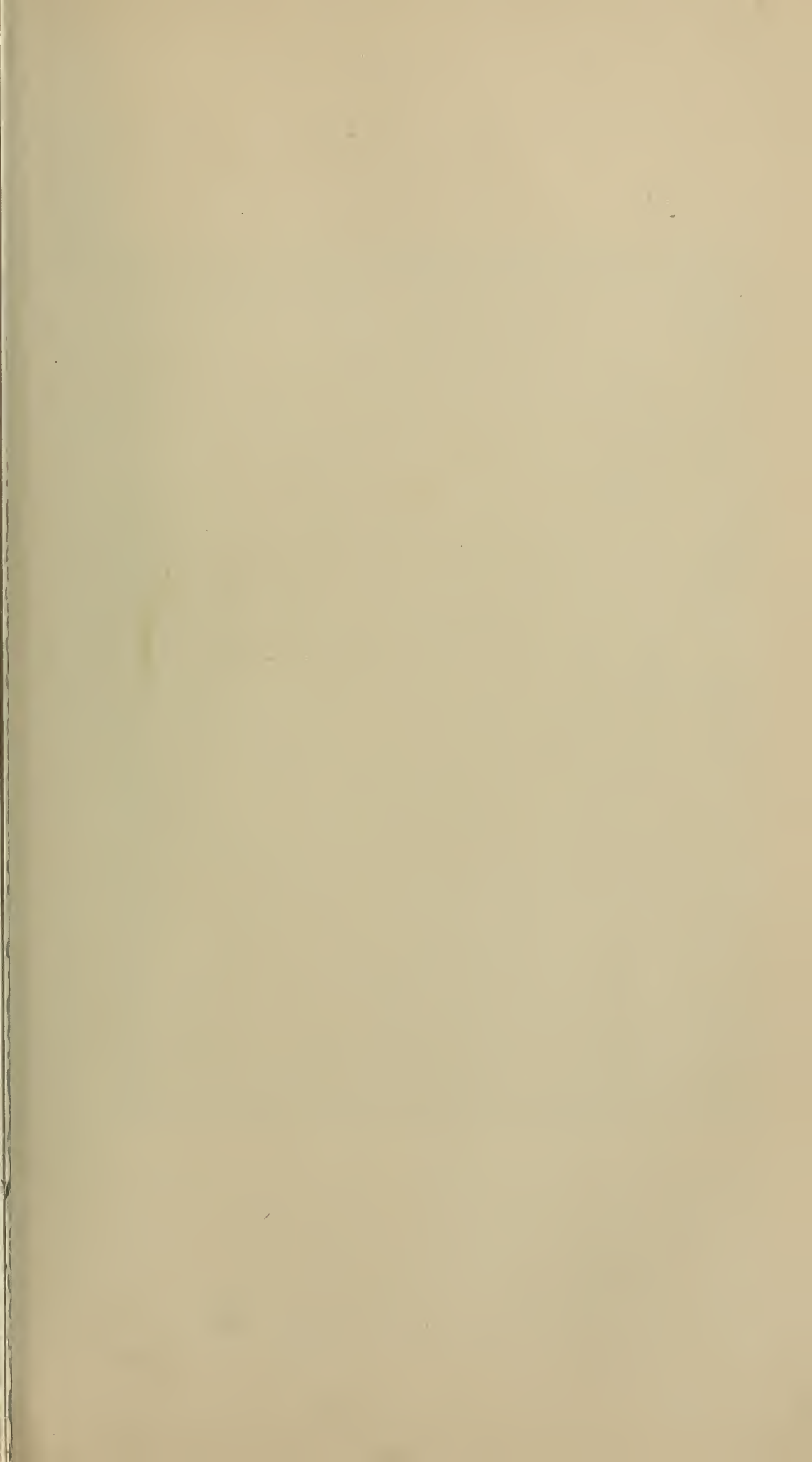


PLATE XXII.



Tubercular Syphiloderm, Resolutive and Serpiginous.

is localized by preference upon the extremities, more particularly the lower extremities, and is indolent in its course. It is always significant of a cachectic condition in the subject of the disease. Its frequent occurrence in congenital syphilis is described later. It is to be distinguished from pemphigus vulgaris by its characteristic crusts and ulcers, considered in connection with the history and associated symptoms of lues.

Syphiloderma Tuberculosum.—In this eruption the lesions are usually multiple, flat, roundish, circumscribed, firm, light-red to dull crimson-red nodules, beginning commonly as macules of a lurid hue. They vary in size from that of a coffee-bean to that of a small nut, and involve the entire thickness of the skin, often also the subcutaneous tissue. Their surfaces are smooth, glazed, or desquamating; and their evolution is peculiar in that they rarely exhibit apical pustulation or ulcerative degeneration.

The eruption is, with few exceptions, usually limited to one or more regions of the body, as the forehead, the chin, the nucha, the buttocks, and the outer surface of the thighs. It is less often disseminated than grouped. Occasionally there may be displayed upon the surface of the body but a single tubercular lesion, the recognition of its character usually demanding some skill on the part of the diagnostician. When occurring in groups the typical circinate appearance of the syphilodermata in general may be wanting, the patches having an irregular boundary; but at times the circular, reniform, or horseshoe-shaped outline is distinct, with an enclosed area of integument unaltered or the seat of atrophic changes. At times the lesions assume a serpiginous character and distribution, a condition to which has been applied the term

Syphiloderma Tuberculosum Serpiginosum.—In exceptional cases serpiginous and tubercular lesions are marked by secondary changes. They may become covered on the surface with a thin yellowish crust; may lose their firmness and become soft and rather more lurid red in hue, from colloid, or rarely even suppurative, degeneration; may vegetate luxuriantly and become the seat, especially on the scalp, of warty growths, smeared with a semipurulent secretion of disgusting odor (syphilis papillomatosa, syphiloderma frambæsioides); or finally they may ulcerate, the superimposed crusts thickening in bulk, deepening into blackish and greenish shades, and covering typical syphilitic ulcerations, with characteristic edges, floor, base, and secretion. The degeneration in the latter case may be rapid and the destruction extensive. This result is, however, of rare occurrence.

The course of the eruption is indolent, months usually elapsing before full evolution is accomplished. In untreated cases there is produced a generalized and symmetrical syphiloderm. It is rare, however, even in hospital and dispensary cases, to observe such development; the more superficial, generalized, and symmetrical are the lesions, the briefer, as a rule, is the interval between such an eruption and the date of infection. The later the lesions, the more are they

asymmetrical, localized, and profound in their involvement of the deep tissues. This syphiloderm rarely appears in the second, more often in the third or fourth, still more rarely in the fifth, tenth, or fifteenth year of the disease.

Resolution occurs by resorption, leaving in the site of the tubercles according to their age, size, and contents, livid and pigmented maculations, or characteristic pigmented, atrophic, cicatriform areas. Scars following the ulcerative lesions are typical in color, shape, and career, the pigmentation of both cicatrix and areola blanching from centre to periphery, and leaving a delicate, dull-whitish, glazed, or slightly desquamating membranous new-growth; ancient relics of this process resembling in appearance thin, small coin- and larger-sized, circular sheets of mica.

FIG. 74.



Ulcerative tubercular syphiloderm. (After KEYES.)

The diagnosis is between lupus vulgaris, lepra, epithelioma, and psoriasis. In lupus the age of the subject, the character of any scars left upon the body-surface, the chronicity of the disease, and the absence of a history of polymorphism, will usually point to the nature of the disease. The tubercles of lepra are very much more indolent than those of syphilis, and have a characteristic oiled or varnished look, never the livid or dull-crimson color of syphilitic lesions. Set upon the forehead, the tubercles of syphilis, near the line of the hairs, never give the leonine aspect of those at the lower border of the forehead and over the eyebrow of the leper. In epithelioma the age of the subject and the history of the disease are always significant. In the early stage of epithelioma the patient is often in a condition of excellent general health, while the imprint of cachexia is distinct in tubercular syphilis of the skin. In the later stages of epithelioma the ulcer with everted edges and eroded, hemorrhagic floor, "varnished"

with a translucent secretion, is totally different from the “punched-out, syphilitic ulcer with its puriform secretion and discolored crusts. The deep infiltration of even the desquamating tubercular syphiloderm will distinguish it from the circular patches of psoriasis.

Syphiloderma Gummatosum.—The gumma is a lesion peculiar to syphilis; no other disease exhibits an exactly similar feature. It is usually a late or so-called “tertiary” manifestation of the disease, and is commonly observed in the form of one or relatively few, subcutaneous, strictly circumscribed, firm, well-rounded, painless, and indolent

FIG. 75.



Syphiloma of the vulva with gummatous changes in labia and clitoris, and languettes of anus accompanying stricture of the rectum.

tumors or nodules which, when first observed, are scarcely larger than a pea. They are then covered with an unaltered integument and are movable.

Very slowly they may, when untreated, increase in size until they attain the dimensions of a marble, of an egg, or even of bodies of a considerably larger size. Sooner or later, when not resolved by treatment, they usually become attached, and the overlying skin is involved, showing by its livid, reddish, or purplish hue and its hyperæmic areola that it threatens to yield. Finally, at one or at several points the skin is so thinned as to be incapable of further resistance, the gumma bursts, and a thick sanious secretion escapes, the gummy character of

which has given the lesion its name. When the inflammation has been active its secretion may be wholly or partially purulent, and in this case be furnished either by the contents of the tumor or by the peripheral tissue which participates in the process. Ulcers always result, which occasionally are fistulous in type, roundish or oval in contour, with edges clean cut, and floor purulent and extending to the subcutaneous tissue, tendons, aponeuroses, cartilage, or bone. Thin and yielding bands or bridges of undermined skin often extend between several such solutions of continuity, and usually melt down in the presence of the destructive process. When repair is progressing, which is decidedly the rule as regards the ultimate result, granulations spring from the floor of the ulcer, the edges contract, and the gummatous eventually exhibits the appearance of a simple ulcer, save in the thinned purplish, pigmented appearance of the outlying integument. The scars are typical, bleaching from the centre, and they may be attached to periosteum or bone, though this is exceedingly rare. Considering the depth of the process, the gumma of the skin is, as a rule, succeeded by less evidence of destruction at the height of the process. About the neck cicatrices may be linear in shape and slightly puckered. Upon the lower extremities and the trunk they are usually circular or oval.

But one gumma may appear upon the person of a single individual, and when this is the case it will usually be found upon the leg. Half a dozen or more may at times coexist. In other cases hundreds form. Gummata may develop upon any part of the body, and when situated over the trunk of a nerve may become the seat of severe neuralgic pain. They are amenable to skilful treatment, and they may undergo resorption, leaving little or no trace of their former existence.

Gummata are to be distinguished from fibrous, carcinomatous, and lipomatous tumors, as also from indurated and enlarged lymphatic ganglia. As gummata occur in very marked preponderance below the level of the knees, and are for the most part single or relatively few in such situation, by their position alone they frequently can be differentiated from each of the new-growths mentioned, no one of which occurs by preference upon the lower extremities. As they are, moreover, relatively late lesions of syphilis, a history of pre-existing symptoms of that disease can usually be obtained.

ERYTHANTHEMA SYPHILITICUM.—Under this title Bronson¹ described a condition observed by himself in syphilitic patients. Upon a well-defined, crimson or livid, erythematous surface (face, palms, soles) appeared an abundant crop of pea-sized vesico-pustules, which were converted later into an exuding, whitish, elevated, diphtheroid patch. The multiformity of the exanthem was characteristic. In parts it suggested the hydroa bulleux of Bazin; in other parts the dermatitis herpetiformis of Duhring. The fluid exudation that affected the face was not characteristic of the evolution of the palmar and plantar lesions.

Later, warty, papilliform lesions appeared over the face and neck,

¹ N. Y. Med. Record, September 4, 1886, p. 253.

somewhat resembling secreting condylomata, and surmounting for the most part a dusky-red or erythematous surface.

This author regarded the exanthem as primarily a syphilitic product but not pathologically or etiologically a true syphiloderm. Its origin was possibly similar to that of the angioneurotic, trophoneurotic, or reflex phenomena of skin-disorders in general, though possibly due to bacterial invasion.

SYPHILIS OF THE MUCOUS SURFACES.

The lesions of syphilis involving the mucous membranes, found chiefly in the mouth, but exhibited, also, in both acquired and infantile disease, over the nasal, aural, vaginal, anal, and balano-preputial surfaces, are strictly allied to the similar symptoms in the skin. The differences are due to maceration of the involved surfaces, to the functions of the organs chiefly implicated, to contact, and to apposition of contiguous parts.

There is, hence, every grade of disorder from hyperæmia to inflammation; and the results of the latter are both ulceration and cicatrization, each result being subject to the special modifications due to the syphilitic process (gummatous deposits, infiltrations, etc.).

In the purely hyperæmic forms there is usually at the moment or soon after the outbreak of general syphilis a pharyngeal or a pharyngo-nasal blush, spreading symmetrically or irregularly over the parts, accompanied often by engorgement of the tonsils, especially in persons previously subject to disorders of the same region due to other causes (catarrh, follicular tonsillitis, etc.). There is then pain on swallowing, and complications may arise, producing laryngeal hoarseness, cough, dyspnœa, aphonia, nasal discharges, crusts blocking up the passages (especially in inherited disease), and impeded transmission of air through the nares. Similar conditions may be observed about the os uteri, the peri-anal region, and others of the sites named above. This may or may not be the precursor of the severer complications—mucous patches, ulcers, and other symptoms of syphilis of mucous surfaces.

MUCOUS PATCHES (Condylomata; Fr., Plaques muqueuses; Ger., Schleimhautpapeln, Feigwarze) are merely syphilitic papules occurring in moist situations, flattened by reason of the apposition of affected surfaces and by contacts necessitated by the functions of the parts involved. They form upon all mucous surfaces, but are nowhere better studied than in the mouth, where they are the most annoying and the most persistent symptoms of syphilis, complicating both the early and the later stages of the disease.

The patches are roundish or oval, tumid, flattened or very slightly depressed, pale-rosey or whitish spots, moistened with mucus, either developing as such or resulting from hyperæmic plaques of the sort described above, or dispersed among or upon the latter. They often resemble the patches produced on the mucous membrane by pencilling the latter with a crayon of silver nitrate. When carefully inspected, many of them exhibit a loosened and partially detached film of membrane, covering the tissue, beneath which a reddish, raw-looking surface appears.

They are seen not merely upon strictly mucous surfaces, but develop also on the verge of the latter (mouth, anus, scrotum), and even on moistened cutaneous surfaces—the edges of nails in infants, and in persons whose hands are often macerated, between the toes, in the vulvo-crural angles, etc. The condyloma is by many writers described separately, but the older authorities were by no means in error when using, as appears above, the term “condyloma” for both the mucous patch and the flattened creamy-looking secreting papules seen often about the anus and the vulva of the subjects of syphilis, particularly those of a tender age; for the condyloma is actually a flattened syphilitic papule, as is the mucous patch, the external appearances of which are chiefly the result of its site and surroundings.

The secretions of these lesions are at times very offensive in odor, especially about the anogenital region, but also about the mouth and the nose (infants, the filthy, and the neglected). They may become fissured (edges of the tongue, tonsils, vagina), may ulcerate deeply, may be the seat of vegetations (papilloma, so-called “*esthiomène* of the vulva,” etc.), and, in general, may furnish a highly contagious secretion. It is probable that mucous lesions are more responsible for the transmission of contact-syphilis than are chancres.

Mucous lesions are to be distinguished with care from simple aphthous patches in the mouth the result of indigestion or local disturbances; also from smokers' patches (leucoplakia buccalis, “psoriasis linguæ,” *leucoplasie*). In external features these patches may resemble one another, but in only one affection, syphilis, are there other signs of infectious disease. The chief points of difference are: singleness, for the most part, of aphthous sores, and often exquisite tenderness; multiplicity, as a rule, of mucous patches, and much less soreness, though when ulcerated the soreness may be a conspicuous feature. Linear streaks and bands (often quite insensitive) of leucoplastic patches are especially found along the gums, on the lines of the inner cheek representing contact with the approximated upper and lower teeth, and in the pocket posterior to the wisdom tooth.

SCALY PATCHES, described by most authors separately, are not true mucous lesions of syphilis. They occur not rarely in syphilitic subjects as flattish, smooth, bluish-white or lead-white, firm, slightly indurated, and roundish or highly irregular plaques. They are visible on the dorsum of the tongue, on the mucous lining of the cheeks, and at the angles of the mouth, where they are situated often in part on the mucous surface and in part on the skin of the lip. The thickened epidermis is at times covered with adherent, not readily removed, scales between which fissures form, and the patch, at first almost insensitive, becomes exceedingly tender and painful.

These patches are for the most part of the order described above, that is, leucoplastic, due chiefly to irritation of the mucous surfaces by tobacco-smoke, yet occurring in syphilitic subjects, as they are preceded often by typical mucous patches. They are almost exclusively seen in men. They are also rarely encountered in inherited syphilis. In the distinction sought to be made between the specific and the non-specific form attention is called to the occurrence in the latter class of hard,

uneven, and considerably thickened patches, which occasionally proliferate, and which, extending to some depth, are eventually transformed into epitheliomatous lesions.

Gummatous infiltrations of mucous membranes ("sclerosis of the tongue," of Fournier) occur in both circumscribed and diffused forms, superficial and deep. In the diffuse superficial forms both the mucous and the submucous tissues are involved in a firm thickening, best studied on the surface of the tongue, which then becomes to the view polished and smooth, at times appearing as if covered with a thin, translucent varnish. Patients exhibiting this condition will often describe a subjective sensation of "slipperiness." These thickenings may involve the deeper structures by every gradation, producing eventually lobulated masses with intervening fissures, tender, raw, and excoriated. The general face of the tongue is then, as a rule, covered with a particularly foul, dirty-grayish coat, and it is occasionally notched at the edge with deep ulcers. At times the tongue is mottled, with patches of redness alternating with the yellowish white of the deposit on the surface of the membrane.

The deeper gummata involve the body of the tongue, and they are felt as submucous, diffuse or circumscribed, dense thickenings (usually tolerably well defined), which soften, ulcerate, and leave exposed to view extensive losses of substance. The floors of these excoriations are deep ulcers, indurated, sloughy, and with membranous shreds over the surface. The fissures of the sides of the tongue described above may here also produce deeply ulcerated notches in the substance of this organ. It is surprising how greatly deformities of this class are relieved after cicatrization, even when considerable loss of tissue has resulted.

SYPHILODERMA INFANTILE, ACQUISITUM ET HÆREDITARIUM.

Syphilis may be acquired by the infant child at any period after birth, as, for example, by immediate contagion from the nipple of the nurse, or mediately, as by the use of utensils smeared with a secretion capable of transmitting the disease. Such acquired infantile disease displays, for the most part, the symptoms observed in adult years, except that the delicate and tender skin at this early period of life often exhibits the moist and secreting lesions of syphilis. The mucous patch, the pustule, and the condyloma are here more common than the papulo-squamous symptoms of the adult. Some influence is also exerted upon the disease by the dress, habits of life, and mode of obtaining nutriment, which are conditioned upon the helplessness of the young child. In this way the soiled napkin over the anogenital region, the warm covering of, and free diaphoresis from, the general surface of the skin, and the frequent contacts of the lips with the nipple, suffice to determine in special regions particular local expressions of the constitutional vice. The acquired is much less grave in character and portent than the inherited form of the disease.

Hereditary syphilis, which may be displayed first in infancy or in early adult years, is always strictly transmitted by inheritance from one

or both parents. The consideration of the disease in these pages being limited to its cutaneous manifestations, it is first to be noted that the infected foetus may prematurely be expelled dead-born with cutaneous symptoms displayed upon its body-surface. Over 90 per cent. of the products of conception affected with inherited syphilis perish in abortions.

This condition generally argues in favor either of intense syphilis in one or both progenitors, or, more commonly, of relatively recent infection of both. Under these circumstances there are usually evidences of the death of the foetus at some date prior to its expulsion, the skin being macerated and the epidermis raised from the corium in few or many bullous lesions, beneath which the derma exhibits a livid reddish or a purplish hue.

When the infant is born with a clean skin it may be shrivelled and emaciated, or be fat and present the appearance of sound health. Soon after birth, however, cutaneous manifestations appear, usually not before the conclusion of the first month, more commonly during the second, rarely after the third and the fourth. The earlier the date of such explosion the more intense, as a rule, is the evidence of the disorder. The first symptoms displayed are significant of visceral involvement, and are, in brief, those of marasmus. Emaciation progresses rapidly; the skin seems stretched unnaturally over the facial bones; the expression is that of physical distress; the cry becomes a fretful moan; the integument loses entirely the rosy hue of the healthy infant, and acquires instead a sallow or muddy tint; and very peculiar wrinkles or puckered lines radiate from the angles of the lips. Few observers have failed to notice the resemblance which then exists between the faces of these emaciated little creatures and those of the aged of both sexes.

In this complexus of symptoms, however, there is absolutely nothing characteristic of syphilis as distinguished from other wasting diseases of infancy. Chronic tubercular meningitis and the gastro-intestinal disorders of infancy in their extreme expression furnish a precisely similar picture. This is natural enough, since all depend alike upon a similar cause, failure of proper performance of function on the part of the viscera in consequence of morbid changes.

The coryza of the syphilitic infant, however, is soon declared, and speedily gives a clue to the nature of the morbid process. The discharge from the nares (at first serous, later purulent) desiccates sufficiently to obstruct the nasal passages or, in consequence of the tumid condition of the membrane lining the passages, is prevented from escaping. Often this discharge is furnished by a specific rhinitis chiefly invading the Schneiderian membrane. At times crusts accumulate externally about the nasal orifices, and they are seen to be similar to those which are prone to form also at the angles of the mouth. In this way the characteristic "snuffles" of the syphilitic infant are induced, in consequence of which it is obliged when nursing to release the nipple from its mouth in order to respire, an act often accompanied by a hoarse cry. The breathing of the syphilitic infant, even when asleep, or awake and undisturbed, is often sufficient to arouse a sus-

picion as to the nature of the disease from which it is suffering. The mouth, the larynx, the vulva, and the anus are often the seat of similar lesions, the development of which into an obstructive tumefaction secreting more or less profusely, or into moist condylomata, will largely depend upon the seat and surroundings of the lesion.

The cutaneous symptoms of inherited syphilis are macular, papular, pustular, bullous, or furuncular, two or more of them being at times commingled, attesting thus the identity of the disease with the polymorphic acquired forms of maturer years. Macules early appear upon the trunk, the face, and the extremities, usually of a livid reddish hue, commingled with papules, and indeed often occur as the first manifestation of the papules. They are irregular as to shape, and though occasionally pinkish, discrete, circinate, and coffee-bean-sized, often produce a diffuse, coppery-red or violaceous, glazed, or moist and secreting surface, affecting an entire region, as the neck, the trunk, or the thighs and the genitalia. Deep excoriations and even fissures occasionally form in these extensive patches, and the secretions may incrust them irregularly, the general aspect of the patch somewhat suggesting an eczematous condition, yet remarkably differing from it in color.

In hereditary as in acquired syphilis the type of all the eruptive symptoms is to be sought in the papules which may spring from the macules described above, and develop into pustules, bullæ, or condylomata; and, in the former case, dull-red or violaceous papules of lenticular size occur either in asymmetrical or symmetrical arrangement, being discrete or agglomerated in patches of infiltration. These papules may, especially upon the buttocks, scale at the apex; or, particularly upon the palms and soles, may constitute by fusion a thickened desquamating epidermal patch; or, commonly about the anogenital region, the interdigital spaces, the axillæ, and face, may become moist and secrete a puriform mucus. By vegetation or by hypertrophy they develop into flat or fissured condylomata, smeared with an offensive, yellowish or yellowish-white discharge; and vary in size from that of a small coin to a lesion a centimetre or more in diameter, with corresponding variation in the degree of their elevation from the affected surface. Condylomata may be few or numerous. Sometimes a child will appear to be well-nigh covered with large, moist, secreting papules. Papulocondylomata may deeply ulcerate and crust. It should be remembered, in studying these symptoms, that they are those of a cachectic infant affected with a grave disease. Death often interrupts the sequence of the manifestations above described. This event is usually preceded by signs of apparent amelioration, shrinkage of hypertrophic growths, and decoloration of hyperæmic lesions and patches. Of the other cutaneous symptoms of hereditary syphilis, vesicles are the rarest; the smaller, occasionally seen, have a conical apex with serous contents, are closely set together about the lips, and spring from a violaceous infiltrated patch. The resulting crusts never have the reddish-yellow tint of those observed in eczema, nor, after rupture, are they followed by serous oozing from a wounded epidermis. The larger lesions of this sort are usually transformations of papules which rapidly assume a pustular phase.

Pustular eruptions, in this form of syphilis, may be discrete or be confluent, localized or generalized. They are particularly prone to occur in groups about the mucous outlets, with maculo-papular lesions developed elsewhere, and they may result in ulceration, often after development into bullæ with pustular or sanious contents. The resulting crusts are bulky and dark colored, and, especially upon the face, disfiguring. The subjective sensations are insignificant, since the child does not attempt to tear the affected surface as in pustular eczema. The cachectic condition of the little patient is usually pronounced when these lesions are large and numerous. They may be seen in typical development by the side of the nail, occasionally involving the matrix, and producing in this situation considerable swelling of the digit, with an ulcerative sequel which commonly results in distortion or an ultimate loss of the nail-substance. Onychia, however, may result from perverted nutrition of the part, with increase in the friability of the nail-substance, loss of lustre, assumption of a dirty-grayish hue, and phalangeal œdema. These changes are analogous to those resulting in loss of the hair where the follicles have been improperly nourished.

The furuncles which form in other cases are either exaggerated manifestations of the same pyogenic tendency in the skin of the infant, a complication common to syphilitic and other cachectic conditions in young children, or are the result of infection with pus-cocci, a more frequent cause. These furuncles may be few or be numerous, and they are chiefly characterized by their indolence, the absence of laudable pus in their contents, the ulcerative condition left after their evacuation, and the bluish or purplish condition of the integument which surrounds their edges.

Bullæ in hereditary syphilis are early or late manifestations of the disease, and they may be represented by a single lesion on the palms or soles (the site of their predilection), or they may constitute a symmetrical generalized efflorescence. Bullæ should be regarded as evidences of a grave form of the disease, being often the precursors of a fatal issue, as indicating a feeble resistance on the part of the epidermis to the fluid exudate furnished from the corium beneath. In severe cases the bullæ are ill developed, and the integument will be seen to be marked here and there by small coin-sized and larger disks or plaques of macerated epidermis, separated from the derma by a thin film of serous, sanious, or purulent fluid, in quantity insufficient to raise the roof above the general level of the integument. When fully developed they may be conical, rounded, flat, or flaccid, and be surrounded by an infiltrated border of dark-reddish or violaceous hue. Their color varies with the color of their contents. Their subsequent career is concluded by shallow or by deep ulceration, the base of each bulla secreting a sanious discharge. Crusts may form if the patient survives. A fatal termination of the disease is usually announced by flattening or collapse of the blebs. The lesions may be commingled with pustules, maculo-papules, condylomata, and mucous patches of the anus, the mouth, and the nares; but they are somewhat different from the other lesions described in that they may constitute a uniform efflorescence, no other

cutaneous symptoms being manifested. The uniformity is due to the fact that bullæ represent the state of feeblest resistance in the epidermis, the fluid exudate of exceedingly low grade mechanically separating the rete from the tissues beneath.

Tubercles and subcutaneous gummata may develop in hereditary syphilis, but only as late manifestations of the disease, one or more years elapsing before their appearance. Their behavior is scarcely different from that of those observed in the acquired forms, although the destruction wrought by their degeneration in very late manifestations may be of the most intractable type. Usually there is a history of preceding parental or inherited disease, and coincident symptoms or sequels of such disease, in altered teeth (as described by Hutchinson), in an ancient keratitis, or in a hopeless form of surdity.

Mucous patches are very constant symptoms of the disease, and they represent papules of the mucous membrane that differ from those seen in the skin only because they are moistened, macerated, and flattened by juxtaposition of neighboring tissues. They are surrounded usually by a lurid halo, and they may have the pearly whiteness always seen when the epidermis of mucous membrane is wholly or partly detached from the corium; or they may lose this protecting disk in shreds or patches, and show, beneath, an engorged or ulcerated and secreting tissue. They may be isolated or be broadly confluent, and be oval, circular, or decidedly linear in shape, the last-named appearance being characteristic of patches existing at the angles of the mouth. Mucous patches are to be recognized as distinct from both the parasitic and the non-parasitic forms of simple stomatitis or thrush, the parasitic form being due to the presence of the *oidium albicans*. In both of the non-syphilitic disorders the mouth of the child is very generally, uniformly, and symmetrically involved, the circumscribed patches being distinctly discrete and resembling in color soft whitish or yellowish flocculi of curdled milk.

The diagnosis is always greatly aided by noticing the well-nigh constant occurrence of patches at the angles of the mouth, which has also the seamed and puckered appearance described above. Snuffles, syphilodermata, and marked cachexia, when established, leave little doubt as to the nature of the malady.

The future of the infant affected with hereditary syphilis is not always as dark as might be gathered from what has preceded. In this, as in the acquired, form of the disease benignancy may be in rare cases a conspicuous feature of the entire process. The evolution of the disease may be tardy; its symptoms be few and unimportant; its amenability to judicious treatment speedily be demonstrated. Still, the fact remains that the disease when inherited is far graver than when acquired, the victim of inheritance entering the world with its viscera and bones subject to profound pathologic alterations. Attention has been directed to the important fact of the frequency with which the syphilitic product of conception perishes.

Etiology.—Syphilis, in the course of which appear the syphilodermata, is produced by either accidental or intentional infection, or

as a result of heredity. In all cases it is believed that the contagium, which reaches the blood through the medium of the lymphatics, is effective by reason of a virus charged with a pleomorphous but as yet undemonstrated bacillus. The physiological secretions of the infected uncontaminated with pathological products are believed to be incapable of acting as virus-carriers, but, especially in the recently infected, such contamination is of frequent occurrence, and is generally effective in the transmission of the malady to persons not immunized by previous attacks of the disease.

The methods of transmission may be immediate, as in sexual congress, in kissing, and in nursing at the nipple, by which act the child may infect the nurse with the secretion of the mucous patches in its mouth; or it may, instead, receive the disease from the excoriations on the breast of the nurse. The disorder may also result through the medium of utensils charged with an infectious secretion, such as the needles of the tattooer wet with saliva commingled with diseased mucus, or the lancet of the vaccinator covered with an intoxicated blood. Generally it may be said that all the discharging and moist syphilodermata are sources of danger to a sound individual, both in the acquired and the inherited forms of the disease.

By these and other similar methods persons of both sexes and all ages may become infected.

However begotten, the syphilodermata are yet not excluded from subjection to the long list of external irritants which may in turn annoy the skin. The influence of a hot bath, or the excitement and perspiration of the dance, will often invite to the surface a macular syphilide which might otherwise be less fully developed; friction, as by the hatband over the forehead, the cuff at the wrist, and the shoe upon the foot, demonstrates its influence by daily examples of determination of the morbid process to special localities. In the trades the hands of the syphilitic laborer betray unmistakable evidences of the irritative effect of harsh contacts; the same may be said of filth, such as the feces on the napkin of an infant that frequently provoke condylomata in the anal region. It is a mistake to suppose that syphilis, and syphilis only, is responsible for the exanthemata of that disease in all shades, grades, and situations. Soap and water are as efficient in preserving the skin of the syphilitic as of the sound subject; and the infected tobacco-chewer pays a price for his nauseous habit. Poverty, misery, and wilful neglect or ignorance of the laws of hygiene, are responsible for a long and lengthening list of the complications of the disease.

Pathology.—Lustgarten, Doutrelepont, and others have described a bacillus found in chancres and in the later syphilodermata. Von Niessen, of Wiesbaden, also has cultivated an organism which is claimed to be common to all syphilitic subjects, and is said by its discoverer to be allied to the ray-fungus. The micro-organism is invariably intracellular and pleomorphous. Pathological results were obtained with it after inoculation of apes, pigs, and rabbits; and it is claimed that signs of inherited lues were exhibited in a second generation of the infected animals. The pathogenic value, however, of these

micro-organisms has not been settled definitely. Syphilis is unquestionably an infectious disease, but the exact nature of its infecting virus is, as yet, undetermined. The agent which produces chancre is undoubtedly present in many of the syphilodermata, while its toxins circulating in the blood are certainly the immediate cause of other lesions. Pustules in this disease in most instances are due to secondary infection, while many of the crusted, scaling, and other unusual syphilides are the result of coexistence with syphilis of seborrhœal eczema or other inflammatory dermatoses.

While the histological changes in syphilis cannot be considered pathognomonic, practically all the lesions, including chancre, show the same structure and processes, varying somewhat in extent, intensity, and in minor features, due to the circumstances of location, state of nutrition of the tissues, and the virulence of the infecting virus. The processes are always chronic in career. There are always hyperæmia and more or less dense infiltration, chiefly about the vessels. Herzog¹ and Rieder agree that the vascular changes in syphilis chiefly concern the veins and lymphatics, the arteries being relatively free; and that the vascular infection proceeds through the lymphatics from the perivascular lymph-spaces. The inferiority of the veins in point of resistance is supposed to explain the difference in susceptibility of the venous and arterial systems. After a general outbreak, either with or without antisiphilitic treatment, hæmatogenous immunity is secured for the time being.

The cells of the syphilitic new-growth are lymphoid in type. There is usually endothelial proliferation. In the solid lesions (papular, tubercular, and gummatous) the microscopical appearances are practically those of tuberculosis, including the presence of giant-cells. The neoplasm is not capable of organization, but undergoes involution either by fatty degeneration and absorption of the cells or by necrosis and ulceration. According to Jullien, the three characteristic features of all syphilides are the cell-infiltration, the inevitable destruction of this infiltrate the cells of which are incapable of organization, and the centrifugal development and retrogression of the neoplasm.

In the macular syphilide the process is superficial and circumscribed. There may be simply hyperæmia, stasis, and effusion of serum with slight infiltration about the vessels of the papillary and subpapillary layers. These vessels are dilated, and show endothelial and perithelial proliferation. There is often a periglandular and perifollicular infiltration of lymphoid cells, and the coil-glands not infrequently show a swollen epithelium. In the urticarial type of macule both the epidermis and the upper part of the cutis may show œdema. In the older and thickened macules the structure gradually approaches that of the papule.

In the several forms of the papular syphilide the cell-infiltration is pronounced in the papillary layer and about the vessels, but extends also to the deeper portions of the cutis. There is more dense perifollicular and perivascular infiltration than in the macule. A few epithelioid and young connective-tissue cells are seen, as also occasional

¹ Brit. Jour. of Derm., June, 1899.

typical giant-cells. Unna describes the new-growth as made up chiefly of plasma-cells of different sizes. The papular syphilide exhibits a larger number of incomplete giant-cells, a different arrangement of the plasma-cells, and more spindle-cells, together with a better preservation of the fibrous tissue along the lymphatics, than are seen in lupus. The firmness of the papule is due to a decided increase in fibrous tissue occurring with the cellular growth. The normal structure of the tissues and the dividing-line between the cutis and epidermis may be effaced by the excessive multiplication and infiltration of cells. Dilatation of bloodvessels with endothelial and perithelial proliferation occurs. The coil-glands show swollen epithelium, which may multiply sufficiently to block the canal or even to obliterate it.

The infiltration is often most marked about the hair-follicles, and may penetrate the root-sheaths, sometimes destroying the hair-papillæ and sebaceous glands. There is frequently a deposit of pigment in the basal layer of the rete, and sometimes in the corium. The connective tissue is rarely involved, and in the majority of papular syphilides the infiltrate is absorbed and leaves no scar. Involution of the deeper and more persistent papules, however, may be followed by atrophic scars. The epidermis is involved secondarily, and may be thickened and exfoliated or thinned and atrophied. On the palms and soles the papules are broad and flat, due to mechanical pressure of the naturally thick and firm epidermis that is closely attached to the deeper tissues. Here, and occasionally in other parts of the body, there may be a persistent thickening and exfoliation, due probably to a secondary inflammatory process, for months or years after all traces of the original cell-infiltration have disappeared. In the anal, genital, and other regions where the papules are subjected to the influence of warmth, moisture, and friction, large, flat condylomata may develop in which the original histological structure of the papule may be largely obscured by the secondary and extensive hypertrophy of the rete, which sends broad processes deeply down between the papillæ, though over the apices of the latter it may be thinned. Œdema of both corium and rete with dilatation of lymph-spaces and leucocytic infiltration is usually pronounced.

Moist lesions (vesicles, pustules, bullæ) are of exceptional occurrence in syphilis, being seen chiefly in the very young, in the very old, in cachectic subjects, or as the result of accidental and secondary infection. These moist lesions form, as a rule, at the apices of the papules, and in some cases are caused apparently by an unusual intensity and rapidity of the process. Destruction of the cells in the centre of a papule may result in a pustule or superficial ulcer. The coexistence of seborrhœa in some of its phases is responsible for the crusting of many of the papular and tubercular syphilides.

The tubercular syphiloderm is practically identical in structure with the papule, but is larger, and is seated deeper within the derma. The connective-tissue hypertrophy is greater proportionately than in the papule, the fibres of the papillæ being much thickened, the blood-vessels and lymph-vessels greatly dilated and their walls hypertrophied. As in the papule, the epidermis is secondarily involved, and atrophic

changes are of frequent occurrence. The tubercular syphiloderm is slower of evolution and more persistent than the papule, hence the mere mechanical pressure of the neoplasm frequently causes destruction and atrophy of the normal tissue, and the involution of the tubercle in such cases is followed by an atrophic scar. Necrosis of the cells in the centre of the tubercle may result in the formation of a small ulcer. Peripheral extension with coincident degeneration and absorption or necrosis and ulceration of the central portion may occur, as in all syphilitic processes. The neoplasm is commonly circumscribed, but may be diffuse.

The gumma corresponds closely to the tubercle in structure and in career; but is larger, and is seated chiefly in the subcutaneous tissue, involving the skin secondarily.

Diagnosis.—According to Justus, a diagnostic test of syphilis is the sudden decrease in hæmoglobin which immediately follows the inunction or injection (not the ingestion) of mercury in full doses.

The syphilodermata are to be distinguished from all other cutaneous eruptions by their general characteristics and by the features peculiar to each lesion. It must not be forgotten, however, that these lesions are not essentially different in character from all others, but are to be recognized with ease or with difficulty according as they do or do not betray the syphilitic expression. No one, however expert in diagnosis, can always trust himself in a doubtful case to recognize these special features by a study of the eruption only, at a given moment of time. Neither in respect to color, form, size, situation, disposition, or other peculiarity do the syphilodermata exhibit an absolute difference from non-syphilitic affections of the skin. It is, therefore, requisite in every case to investigate in the fullest manner the history of the disease, of all prior skin-lesions, of a primary sclerosis (when this can be obtained), of adenopathy, miscarriages, abortions, and disorders affecting other organs of the body, as the bones, the viscera, the organs of sense, and the mucous surfaces. Often a single extra-cutaneous fact will be a valuable aid in establishing the diagnosis of syphilis. An "eczematous" infant with snuffles and a hoarse cry has been treated in vain by many a physician, otherwise capable of making a diagnosis, who might have been given a clue to the nature of the disease from which the child was suffering if he had taken the pains to inspect the anus and question the father in private.

Every syphilitic patient with a disease of the skin does not necessarily exhibit syphilodermata. The course of the disease in many cases is so protracted that patients have ample opportunities to contract other disorders, and their number is larger than is commonly supposed. They suffer most often from the medicamentous eruptions, especially those induced by the ingestion of potassium iodide (cf. the chapter on *Dermatitis Medicamentosa: Drug-eruptions from Salts of Iodine*); they are, like other men and women, bitten by bugs and lice; and they suffer from eczema, acne, psoriasis, and other non-venereal disorders. This common susceptibility is less true possibly of the innocent victims of the disease than of those guilty of sexual excesses in and out of the

married state, many of the unmarried leading the most disordered lives, and exposing themselves to the ordinary causes of disease to a degree not noted in other persons.

It is always necessary, therefore, in making a diagnosis in a case supposed to be syphilitic, first, to determine *ab origine* the fact of syphilis; and, if that fact cannot indubitably be ascertained, to be careful that the statements of the patient are not allowed to bias the judgment in pronouncing upon any eruption present; second, supposing that such a fact is established by clinical proofs without reserve, to decide whether the eruption present is produced by the existing syphilis or some other externally or internally operating cause; and if this last be determined, to be careful in eliminating the syphilitic influence from its operation.

Ignored syphilis is usually severe; but it is without avail that disorders of a different character are treated by the methods useful in syphilis. Thousands are annually thus mistreated who might have been spared such a calamity. The frequent occurrence, after a suspicious exposure, of a balanitis, of an attack of progenital herpes, of uninfected excoriations, of blennorrhagic discharges, and even the appearance of molluscous tumors, warts, or parasitic cutaneous disorders upon the genital region, is a source of alarm and of fruitful error to the many rather than to the few.

The diagnostician none the less must ever be on the alert to recognize the symptoms of the disease in those who least suspect it. Thus, married women complaining of a "humor of the blood," men who have been "overheated and broken out with a rash," and a long list of patients exhibiting upon their persons the symptoms of "salt rheum," "tetter," "scrofulous ulcers," and "erysipelas" are those whose speedy relief will depend upon the skill of the practitioner in recognizing the precise nature of the malady.

The diagnosis of syphilitic lesions of the skin is a matter of the very greatest importance, inasmuch as the health, comfort, mental happiness, and domestic relations of thousands of men and women annually depend upon it alone. An error in either direction may involve the most serious consequences to both physician and patient. He is but poorly qualified to discharge the important duties of a general practitioner of medicine who has not carefully trained himself to establish the truth in these cases, irrespective of the diagnosis of the patient and of all others who may have been consulted.

Treatment.—The syphilodermata are to be treated by topical applications intended to hasten their disappearance or involution; but as local manifestations of a constitutional disease, their management is largely that which looks to the relief of the latter.

The treatment of syphilis, in the pages which follow, is described in outline, so far as it relates to the relief of cutaneous lesions and of the systemic condition. The important modifications of therapy that are required in the management of syphilis of the osseous and the nervous systems, of the respiratory, gastro-intestinal, and other organs, it is scarcely necessary to remark, are fully described in the standard treatises specially devoted to this subject. Among them may be named,

as of American authorship, the works of Taylor,¹ of Morrow,² of E. L. Keyes,³ of Hyde and Montgomery,⁴ of White and Martin,⁵ and of Bangs and others.⁶ Of those more or less recently published abroad may be named the standard treatises of Jullien,⁷ of Fournier,⁸ of Diday and Doyon,⁹ of Mauriac,¹⁰ of Neumann,¹¹ and of Lang.¹²

The first and often the most important consideration for the practitioner who is in face of a syphilitic patient is the care of that patient's general health. Simple and natural as it may be to set down such an injunction in this connection, its importance rests upon the fact that it is too often neglected. Patient and physician respectively are often hurried into the precipitate ordering and swallowing of specific drugs without regard to other as important details.

It is well to hand to the patient, at the outset of all treatment for syphilis, a slip of paper on which are printed in concise and simple terms a set of rules to be observed during the continuance of the disease. For physicians who do not take similar precautions it is advisable to enter rather fully into the explanation of certain details which the patient should be made to understand.

He or she, if an adult, should, as a rule, be informed of the serious nature of the disease recognized, since every infected patient has an interest in knowing this fact, and its important bearing upon his or her relations to the uninfected. To every such patient, with the assurance that the disease is often benign and productive of little discomfort and in any case is curable, it should be stated that the affection is contagious and capable of transmission to sound persons by physical contacts of various characters. The patient should be instructed as to the nutritious character of the diet he should select, and should be informed that an increase in body-weight while subjected to treatment is decidedly favorable in the matter of prognosis; that the starving and sweating processes so highly esteemed by the charlatan and the advocate of the virtues of the waters of certain resorts are relics of antiquity, as useless in fact as they are frequent sources of peril.

The bathing of the body is a matter of importance. Hot, Turkish, and Russian baths, as a rule, are to be interdicted, inasmuch as they tend to invite cutaneous hyperæmia, and thus to favor the occurrence of eruptions. Cool or tepid baths are to be employed sufficiently often

¹ The Pathology and Treatment of Venereal Diseases. Philadelphia, 1900.

² System of Genito-urinary Diseases, Syphilis, and Dermatology. New York, 1893 (3 vols.).

³ Surgical Diseases of the Genito-urinary Organs, including Syphilis. New York, 1888.

⁴ Syphilis and the Venereal Diseases (2d edition). Philadelphia, 1900.

⁵ Genito-urinary Surgery and the Venereal Diseases. Philadelphia, 1897.

⁶ American Text-book of Genito-urinary Diseases, Syphilis, and Diseases of the Skin. Philadelphia, 1898.

⁷ Traité pratique des Maladies vénériennes. Paris, 1886.

⁸ Leçons sur la Syphilis, etc. Paris, 1873. La Syph. Héréd. tard., 1886. Traitement de la Syphilis. Paris, 1895. Les Chancres extra-génitaux. Paris, 1897. Traité de la Syphilis, tome i. Paris, 1898-99.

⁹ Thérapeutique des Maladies vénériennes. Paris, 1876.

¹⁰ Leçons sur les Malad. vénér. Paris, 1883 and 1895.

¹¹ Syphilis. Vienna, 1896.

¹² Vorlesung. über Pathol. u. Therap. d. Syphilis. Wiesbaden, 1896.

for the purpose of cleanliness, and by the sponge rather than by immersion. Dry friction daily of the surface of the body may be ordered with advantage where the skin is still sound. The teeth, the mouth, and the gums require constant care. The use of the tooth-brush with cool water twice daily is a matter of importance, and the brushing should be preceded for a time, when the gums at the outset are in a tender, fungous, or hemorrhagic state, by gentle friction of the teeth with the finger, covered by a handkerchief dipped in a weak spirit-and-water lotion, to which tincture of cinchona and of myrrh may be added in any desired proportion. Tobacco in every form is decidedly injurious. Often the patient should be sent to a competent dentist for the extraction or the filling of carious teeth, and for the removal by the file or the dental engine of all sharp, projecting edges.

Malt liquors, wines, and spirits should be employed solely under the explicit direction of the physician. They are exceedingly useful in debilitated subjects of a certain class, and need not be prohibited *in toto* to those long habituated to their use. At the same time, an improper use of these stimulants is in the highest degree harmful. When employed at all, they should be restricted rigidly to the dining-table and the hours of meals.

A compliance with the laws of hygiene is even more requisite for the syphilitic than the non-infected. Fresh air, social amusements, exercise, the regular routine of business life, or, when this has proved exhausting, the recreation of travel—the claims of all these need at times to be urged by the physician. With this the patient should be encouraged to free his or her mind from needless anxiety, and to avoid particularly the company and conversation of those similarly infected, whose opinions are based too often upon ignorance or upon a knowledge of half-truths. The literature of syphilis, for a similar reason, is to be eschewed, as a mass of patients, too many of whom purchase treatises on the subject, are able only imperfectly to glean the meaning of the authors consulted.

It should be a rule to urge a married patient to inform the conjugal partner frankly of the fact of infection, for the sake of both. When this advice is followed much future trouble is avoided, and one of the obstacles to a completely favorable issue is at once set aside. Instances occur in which disruption of the conjugal bond results from infection of one, but usually of both parties; it is a striking argument, however, in favor of the policy here urged, that cases are rare in which a frank and honorable confession has been followed by separation. It may be added that in no one of the “confessed” cases has there been a subsequent infection of the innocent. The larger number of married patients are husbands. Recently infected young adults who have contracted a marriage-engagement should invariably claim release from such a tie for the sake of all concerned. The syphilitic nurse must at once be taken from the sound nursling, and the child with hereditary syphilis must be suckled only by its mother, who, according to Colles’s law, the exceptions to which are so few as to prove the rule, always enjoys immunity against the diseased mouth of her own child.

Respecting the medicaments employed in the treatment of syphilis, there is no routine plan which in every case can advantageously be followed. In no respect do physicians so differ from each other, judged by the standard of professional skill, as in their ability to use a single remedy with success. He who has the largest armamentarium is not always either the best equipped or the most successful. Mercury, iodine, iron, and quinine are the great remedial agents in syphilis, but they may vainly be used by one man in the long effort to accomplish that which another speedily and brilliantly achieves by the use of the same remedies employed with greater skill.

Of the other substances vaunted as either advantageous or specific in the treatment of the disease, no one possesses any claim whatever to the confidence of physicians. Sarsaparilla, dulcamara, stillingia, guaiacum, tayuya, mezereon, and the long list of other vegetable preparations whose virtues have thus been extolled, are for the most part as harmless in themselves as they are ineffectual for the relief of the malady.

Before proceeding, however, to assume the responsibility of directing a course of treatment for syphilis with remedies of acknowledged value, the physician will do well to remember that no two cases of the disease are precisely alike, and that there is the widest range between the most benignant forms encountered in private practice and the malignant cases seen in hospital-wards. Some forms of the malady are so mild as to constitute merely an inconvenience; others are so severe as to destroy life. It is an axiom in venereal disease that more patients perish annually from blennorrhagia and its results than from syphilis. There could be no greater error than to treat by a uniform method any disease exhibiting so wide a variation in severity.

Mercury, after the assaults upon it of generations of men of admitted wisdom and candor, stands to-day unrivalled as a remedy for the relief particularly of those stages of syphilis in which the skin is involved. Administered with skill, it can be employed for years with immense advantage to the syphilitic patient, who, during a well-regulated mercurial course, should gain in weight, improve in vigor, and exhibit a healthy color of the skin. No competent physician of to-day employs it in such a manner as to induce salivation or other toxic consequences. Such effects of the remedy result from the carelessness or the ignorance of the prescriber. It should be remembered that in every discussion of the merits of mercury in syphilis both physicians and patients have been guilty of the ignorance or the folly of ascribing to the remedy the disastrous effect of the disease.

Mercury may be given by the mouth, by inunction, by subcutaneous injection, or externally by the aid of the vapor-bath. The most popular method, and that productive of least inconvenience to all concerned, is the method by ingestion.

INGESTION.—In this mode of treating syphilis the mild chloride, bichloride, bicyanide, or blue mass, of mercury may be employed effectively. These preparations, however, are rather less adapted than others for continued employment during long periods of time, and are open to the objection of either readily undergoing rearrangement into more

stable compounds of the metal, or of producing undesirable irritative effects. With the protiodide and the biniodide an impression can be produced upon the system that can readily be proportioned to the exigencies arising in every case, which can be sustained during that "chronic medication" which Fournier declares to be requisite in every chronic disease, and which can be exerted without fear of immediate or of remote deleterious consequences.

Treatment of syphilis by the mercurial selected for use should, as a rule, be begun only at the moment of evolution of constitutional symptoms. The initial sclerosis of the disease is amenable to the action of the metal to a remarkable extent, but in a large proportion of cases the chancre will cicatrize, when in an ulcerative stage, without having recourse to general medication. Early mercurial medication may well be reserved for such primary lesions as are threatening in symptoms, and for such individuals as require or demand speedy cicatrization of their chancres, as, for example, those about to travel beyond the reach of medical assistance. Personal experience fully confirms the wisdom of the teaching which reserves specific medication until the second period of incubation has passed. No local or general treatment can avert either a mild or a severe explosion of symptoms after that period is completed. In experiments made to determine this question of delay there has been either the production of strikingly irritative effects, such as a marked relapse, or unusual increase in the volume of the initial sclerosis immediately before the evolution of the first syphilodermata, or a distinct obstinacy in the latter to the action of the medicament employed.

In the early stages of syphilis in adults the mercurous iodide may be named as one of the most trustworthy preparations. Of all classes of adult patients, including strong men and adult women, there are scarcely 2 per cent. who cannot take it, if the dose be proportioned to individual susceptibility. It is usually administered in pill or in tablet form in doses of $\frac{1}{8}$ (0.01), $\frac{1}{5}$ (0.013), $\frac{1}{4}$ (0.016), or $\frac{1}{3}$ (0.022) of a grain, three times daily, combined with the extract of gentian. The dose may be increased gradually according to the necessities of the case, from $\frac{1}{2}$ (0.032) to 3 (0.207), and even 4 (0.266) grains in the twenty-four hours. Many of the gelatin-coated pellets found in the market contain accurately divided doses of the salt. The sugar-coated pills of Garnier and Lamoureux, containing each 1 centigramme of the protiodide, are efficient and largely employed.

Beginning with a minimum dose, this remedy is to be steadily exhibited, and the daily quantity consumed to be gradually increased until the degree of tolerance of which the patient is capable has been ascertained. Should the stools become frequent, pain be excited, or a slight effect produced upon the mouth, as indicated by a metallic taste, moderate increase in the quantity of saliva, or any noticeable degree of tenderness of the gums, the dosage is to be gradually diminished until these symptoms disappear. Often the withdrawal of $\frac{1}{2}$ (0.033) or $\frac{1}{5}$ (0.013) of a grain daily will suffice to enable the patient to tolerate the quantity thus diminished. The medication is to be faithfully continued until the object in view is obtained, viz., relief of all symptoms of the disease.

In Keyes's so-called "tonic treatment of syphilis" the dosage is increased only on each third or fourth day, until irritative effects are produced, when, after an interval of two days, the quantity taken at the time of the production of such effects is reduced from one-half to one-third. This reduced quantity is termed the "tonic dose," and is thereafter continued throughout the treatment in "nearly all conditions of health or disease."¹

It may not be proper to administer a mercurial for weeks at a time to all subjects of syphilis who are in apparently good health. With the active measures at immediate control in the vapor-bath, it is usually safe and not unwise to suspend temporarily specific medication of the patient who exhibits such amelioration of symptoms as to be free from external manifestations of the disease. Every syphilis has its periods of activity and repose. Such period of repose will well be employed in the administration of iron, which, as tending to relieve the distinct chloro-anæmia of the disease, has its claims to recognition in the list of "specific" remedies. No case of syphilis can be said to have been treated properly in which this remedy has not been given for at least a part of the time during which the patient was under observation. Ferric citrate with quinine is an excellent preparation administered at the meal-hours, in a small quantity of sound sherry wine; or ferrous iodide may be employed in syrup, or in the pills made after the formula of Blancard, or in Vallet's mass. In some cases tincture of ferric chloride may be employed, but the physician should be careful about ordering an acid preparation of any kind during the interval of a mercurial course. There is no form of anæmia which responds more promptly to the chalybeates than does that produced by the syphilitic virus.

The mercuric iodide may be substituted for the mercurous iodide when, for any reason, it is thought desirable, beginning with a minimum dose of $\frac{1}{64}$ grain (0.001), and increasing this gradually to $\frac{1}{40}$ (0.0016), or rarely to $\frac{1}{20}$ (0.0033), either in pill or in solution. The average dose of $\frac{1}{40}$ (0.0016) of a grain in pill-form, administered three times daily, soon after eating, is tolerated by the majority of all patients of both sexes without consciousness of unpleasant effects.

For those who prefer to use the more active and correspondingly dangerous salts of the metal, calomel may be administered in 1 or 2 grain doses (0.066–0.133) three times daily, in combination with an opiate to prevent its action on the bowels, or in $\frac{1}{10}$ grain dose (0.0066) every hour. Small doses of blue mass or of gray powder may also be employed. The gray powder is most suitable for children and infants, but since the frequent discovery in the drug of the corrosive chloride, either as of early or of late chemical production, the gray powder is less esteemed. The decimal trituration of calomel with sugar of milk is a far more suitable compound. Corrosive sublimate, in doses of from $\frac{1}{20}$ (0.0033) to $\frac{1}{12}$ (0.005) of a grain is exhibited in pill-form or in solution, and is probably more generally employed in the treatment of syphilis than any other mercurial salt. The objections to its use are

¹ Amer. Jour. Med. Sci., January, 1876; Phila. Med. Times, November 25, 1882, p. 337.

suggested above. Though constantly employed in public charities, where it is furnished as a cheap and a convenient substitute for the more elegant preparations in the market, it is much less frequently ordered for syphilitic patients in private practice. When given in solution it produces a disagreeable metallic taste in the mouth that some patients can perceive after the lapse of hours.

With many physicians of wide experience it is customary to employ opium, either alone or in connection with the use of mercury, for the relief of ulcerative or other lesions of syphilis. Sometimes it is employed for the purpose of relieving pain, sometimes to prevent the cathartic action of the metal upon the bowels, and again because it is supposed to possess some power of arrest over the destructive action of the disease. It should not, as a rule, be exhibited when by reducing the mercurial or exchanging the latter for a ferruginous dose the same result can be reached. Few syphilitic patients are in the end brought to the desired termination of the disorder by the use of a remedy which interferes with assimilation and digestion; such a remedy is opium in all its forms. Temporary advantage is often gained by its employment, but this may be more than counteracted by its ultimate effect upon the gastro-intestinal tract.

INUNCTION.—Mercury is also satisfactorily introduced by the method of inunction. The metal when thus employed is readily absorbed by the system, and its therapeutic value is no less evident. Inunction should be employed in every case which admits of it, since the gastro-intestinal tract is thus left undisturbed, and, further, the dose of any needed chalybeate or of potassium iodide by the mouth can be regulated without increasing or diminishing the quantity of mercury in daily use. Mercurial ointment compounded with lanolin is best used for this purpose, but a cleanly substitute for it is provided in the oleate of mercury in the strength of 10, 15, or 20 per cent., and in the vasogen capsules. From $\frac{1}{2}$ to 1 drachm (2–4.) of either the ointment, the vasogen compound, or the oleate may be rubbed into the skin at night before retiring, and the part selected for inunction be cleansed by washing in the morning. Unna for this purpose praises the mercury-salve soaps. All these preparations, if continually applied to a single portion of the skin, are liable to produce a mild local dermatitis or an eczema, hence it is wise to select on successive evenings a fresh portion of integument for the local application, preferably that where the epidermis is relatively thin, as, for example, the flexor aspects of the joints. The patient can thus upon one evening anoint the inner faces of the thighs; upon the next, the sides of the chest; upon another, the loins, etc., taking care to avoid surfaces where an induced eczema is likely to prove especially annoying, such as the scrotum, the axillæ, and the groins. The ointment in some cases may be well rubbed into the soles of the feet previously soaked in warm water, after which the socks or stockings may be drawn over the feet for the night. In the case of infants the inunction is well performed by the natural movements of the child, if a flannel swathing-band previously smeared with the salve be wrapped about its belly, so that the mercurial preparation is kept in contact with the skin. Should local irritative effects be produced, these

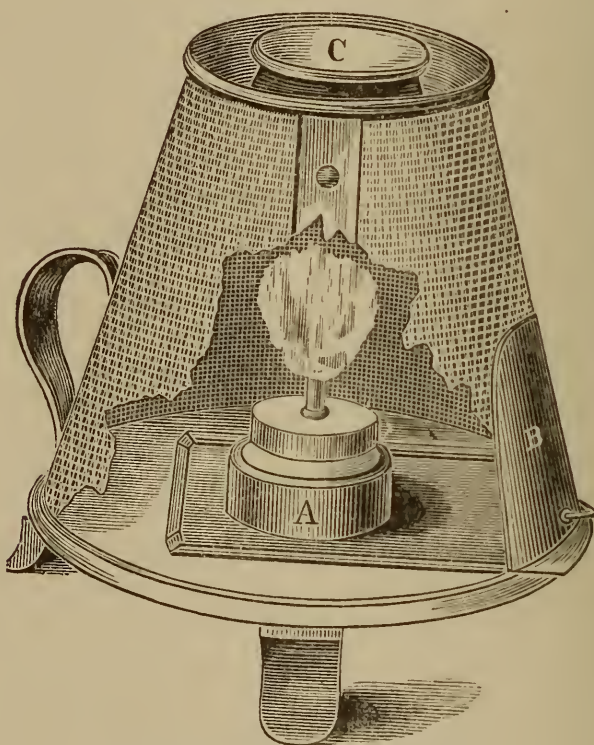
subside rapidly, as a rule, after a warm alkaline ablution followed with a bland dusting-powder. Subsequently or even before such accident in the case of infants or of patients having unusually sensitive skins the mercurial salve may be mixed with equal parts of lanolin, lard, or olive-oil. As some patients become disgusted with this routine, it is well at the onset to flavor the substance selected for inunction with lavender, rosemary, or bergamot.

Too little attention has been attracted to the treatment of syphilis by mercurial inunction. With this fact in view the preceding paragraphs which describe the use of mercury by the mouth are to be understood as related in all cases to the employment of the metal by the skin. It is well to order inunction in all practicable cases; to save the stomach as much as possible; to continue with the mercurial ointment nightly, weekly, or less frequently, so long as there is a possibility of relapse; and to adjust carefully the quantity employed to the exigencies of the case. In this manner patients may be relieved of all symptoms of the disease who have not during their treatment swallowed a dose of mercury, and the permanency of whose relief may be tested during years of subsequent observation.

FUMIGATION.—One of the most effective methods of administering mercury is by fumigation in the vapor-bath. It is employed by many experts as the sole means of exhibiting the mercurial selected for use, but it is, for the average patient, too inconvenient for continuous employment. It should regularly be ordered, first, in all cases in which the earliest syphilodermata are intense, generalized, and particularly conspicuous upon the face; second, in all obstinate cases in which the patients are not women nor cachectic subjects of either sex; third, at the outset of treatment of many “ignored” cases in which the syphilodermata, either more or less generalized, have proceeded to uninterrupted evolution; fourth, in the severe cases of patients coming from the country to the city, who are able to remain but a brief time within reach of advantages offered in metropolitan centres. From $\frac{1}{2}$ to 1 drachm (2.–4.) of calomel, metallic mercury, the bisulphuret, the black oxide, or hydrargyrum cum cretâ may be employed for each bath. It is common to order 1 scruple to 1 drachm (1.–4.) each of calomel and cinnabar. The patient is stripped of his clothing and seated in a chair, the patient and chair being completely enveloped in blankets, which are closely fastened at the neck of the bather. Beneath the chair is an alcohol lamp, surmounted by a metallic vessel containing water in ebullition, the hot vapor of which in a few moments induces copious perspiration. When this result is obtained the lamp is brought beneath a metal plate containing the substance to be volatilized. The patient remains exposed to the vapor about ten minutes after this process of sublimation is finished, and retires at once to bed without cleansing the skin, the fumigation preferably being conducted before the hours of sleep. In the morning a bath may be taken for the purpose of cleanliness. It is more convenient in the generation of the vapor in this way to make use of Henry Lee’s safety fumigating-lamp, but the materials requisite for the production of all desired effects, with the exception of the alcohol lamp and the drug, can be procured

of any skilful tinsmith. In the city male patients are often sent to bath-houses, where the fumigation is conducted in the daytime; and, as a consequence, they rarely experience unpleasant effects, such as are popularly associated with "taking cold" after exposure to the action of mercury. In most of these establishments provision is made that the head also can be exposed to the mercurial fumes, respiration being conducted through a tube in connection with pure air, a provision useful in certain cases of emergency; and only "emergency cases" should be required to resort to fumigation of the head.

FIG. 76.



Lee's safety-lamp for fumigation.

The happy effect of the mercurial vapor-bath is often marvellously rapid. A generalized syphiloderm may become well-nigh indistinguishable upon the surface after four baths at intervals of two days each. With this potent agency at hand, it can be understood how the skilled physician can afford to watch from week to week his syphilitic patient taking a dose of iron internally and employingunction externally, the lesions fading slowly from the surface, all fears, quieted, and nutrition sustained at a high grade. In comparison with this combined method, the swallowing of blue mass, or of calomel and opium, should be regarded as a clumsy and dangerous procedure.

SUBCUTANEOUS INJECTION.—The treatment of syphilis by mercurial injection has largely been extended since its acceptance as a scientific procedure. It should never be ordered save in cases specially indicating its employment. With some of the other methods employed, injection provides for the exclusion of the medicament from the gastrointestinal tract, and accomplishes the desired effect with a minimum and

exactly mensurable dosage. The objections to its systematic employment outside of hospitals are chiefly the need of a physician or an expert to administer the dose. The injection of mercury into the deep muscular tissue (the gluteus in its thickest part with the muscle wholly relaxed; the trapezius above the upper scapular angle with equal lack of tension), as well as when practised more strictly hypodermatically, requires all antiseptic precautions both as to the point where the needle is inserted and as to the instrument itself. It is to be remembered that these injections have occasionally proved fatal (calomel, gray oil), and grave mischief has followed in one or two instances from visceral troubles.

This method, which was first popularized by Lewin,¹ is open to the serious objection, while reaping the obvious advantages, of requiring the aid of a physician for the administration of each dose. It is efficient and speedy, but will probably always find largest favor in the treatment of hospital patients, who are completely subject to the orders of their medical attendant. At the site of the injection, too, not rarely abscesses have formed. Corrosive sublimate, $\frac{1}{12}$ (0.005) or $\frac{1}{8}$ grain (0.008), dissolved in 10 or 15 minims of distilled water may be injected at a time, the operation being repeated upon about twenty occasions. Bamberger, of Vienna, reported favorable results after the injection of an albuminate or a peptone of mercury, thus attempting to avoid the danger of localized abscesses, and insuring speedy absorption of the metal. All formulæ, however, proposed for preparation of solutions of this character have proved imperfect, both in consequence of failure to obtain a pure metallic albuminate, and also from lack of permanency in the solution. Staub's formula, the result of experiments made by Hepp,² may be taken as a sample of the rest:

R	Hydrarg. chlorid. corros.,	gr. xvijj;	1 20	
	Ammon. chlorid.,	gr. xvijj;	1 20	
	Sod. chlorid.,	ʒj;	4	
	Aq. dest.,	f ʒiv;	120	M.

Dissolve, filter, and add the white of one egg in distilled water sufficient to make ʒiv (120.); 15 minims of the solution contain about $\frac{1}{12}$ grain (0.005) of the sublimate.

Other preparations employed for hypodermatic injection are as follows:

Insoluble salts of mercury. Here are included calomel in an average dose of 1 grain (.066) suspended in vaselin-oil, salt and water, or mucilage and water; metallic mercury, from 6 to 30 grains (0.40–2.); oleum cinereum, mercury with liquid vaselin or lanolin, 20 to 50 per cent., 0.05 to 0.1 at each injection; and the yellow and the black oxides of mercury, corrosive sublimate, mercuric cyanide, and combinations of these with potassium iodide and other salts.

¹ Die Behandlung der Syphilis mit Subcutaner Sublimat-injection, Berlin, 1869; also translated by Proegler and Gale, Phila., 1872.

² Traitement de la Syph. par les Inject. hypoderm. de Sublimé. Thèse de Paris, 1872.

The so-called "antiseptic group" includes salicylate of mercury. A Pravaz syringeful is injected every third day in the gluteal region beneath the muscular fasciæ, of the following:

R	Hydrarg. salicylat.,	gr. xv-xxiv;	1.-	
	Mucil. acac.,	gr. viij;	533	
	Aq. dest.,	f℥vss;	165	M.

In this group are also included carbolate of mercury; thymolate (10 per cent. suspensions in fluid paraffin); and the benzoate associated with sodium chloride, 2 parts, and cocaine hydrochlorate, 1 part, in 500 of water.

The amide group includes mercuric formamidate, 1 per cent. solution; glycocoll of mercury, alaninate of mercury, and succinamide of mercury, the last two in 1 per cent. solutions.

Beside these mercurial preparations, potassium iodide and iodoform have subcutaneously been injected in a few instances, it is claimed with advantage.

Intravenous injections of mercury in syphilis have been practised, but, according to Marshall,¹ have not been shown to possess any advantages over other methods employed. Chopping, however,² had satisfactory results in twenty-three days after introduction into artificially distended veins of 20 minims of a 1 per cent. solution of mercurous cyanide.

Ptyalism, stomatitis, fetor of the breath, or a fungous condition of the gums with inappetence and other characteristic symptoms of the ill effects of mercury, including all grades of gastro-intestinal disturbance, are rarely seen in modern practice, and they should never be permitted to occur in a properly regulated mercurial course. When they are produced, the tongue projected from the mouth is usually tumid, and exhibits at its lateral borders the imprints of the inner faces of the molar teeth. Its surface is also covered in various degrees with a thin, dirty-grayish coat; and the odor of the breath is peculiarly offensive, being often noticeable at a distance of several feet from the patient. In such cases the food should be liquid and nutritious, both hot and cold drinks should scrupulously be avoided, and the mouth frequently be cleansed with washes containing dilute liquor sodæ chlorinatæ, potassium chlorate, borolyptol, or a very weak solution of carbolic acid. In particularly severe cases, potassium chlorate may be employed to the extent of 1 drachm (4.) daily. The compressed tablets of this salt, each containing 5 grains (0.33), may be slowly dissolved in the mouth. The mercurial is to be suspended in all cases, and iced water is to be interdicted, gangrene having followed its use in a few cases. In milder forms tincture of myrrh and of cinchona, diluted with sweetened water, or honey and water, will be sufficient for local medication of the mouth.

Iodine is chiefly employed in syphilis in the form of potassium iodide. It possesses some value, without question, in every stage of

¹ Lancet, April 1, 1899.

² Ibid.

syphilis, and is, therefore, indiscriminately used by many practitioners. Its value, however, in so-called "late secondary" and "tertiary stages" is incontestably greater than in the earlier lesions of the disease, and its use should largely be restricted to the particular periods in which these manifestations appear. Every prudent physician will hesitate before ordering for a disease exhibiting cutaneous lesions a remedy which will positively produce such lesions in the majority of all patients ingesting it. In this connection the reader will do well to consult the chapter on *Dermatitis Medicamentosa*, in which the various eruptions produced by this drug are recorded. Thoughtful men are beginning to inquire, in the light of the present knowledge upon this subject, to what extent the syphilodermata have in the past been aggravated or obscured by this remedy. He would indeed be bold who should attempt to prove that the medicamentous eruptions thus excited have not, in the past, figured largely in the catalogue of the syphilodermata.

The value of the iodine compounds, nevertheless, properly adjusted to the age and other conditions of the disease, is incontestable. Whether given alone or by the so-called "mixed" treatment in combination with mercury, or administered internally while a mercurial is introduced by the skin, or exhibited by alternation with the metal, in each these compounds find a special value, and may simply be indispensable. Potassium iodide may be given in doses of from 5 grains (0.33) to 1–2 drachms (4.–8.), well diluted with water, three or four times daily one hour after eating. The larger doses should invariably be reached gradually; they should never be employed except by special order of the physician, and when the patient is within easy reach of the latter; and they should always be ordered with the understanding that the patient shall diminish or suspend treatment in case of unpleasant results. When the remedy produces gastric distress it is often administered in connection with pepsine, pancreatine, or taka diastase. Often the dosage is well tolerated when given in a glassful of milk.

Symptoms of iodism, other than the production of cutaneous lesions, such as coryza, œdema of the eyelids, and faucial irritation, are likely to be the result of the first few doses of iodine ingested, and these symptoms often bear no relation to the size of the dose. In certain cases, 1 or 2 grains (0.066–0.133) will be sufficient to produce the most disagreeable toxic effects, which, if they occur before the remedy be suspended, may not return with even the largest doses. In a few cases potassium iodide produces violent toxic effects in any dose, owing to exceptional idiosyncrasy. Both ammonium chloride and ammonium carbonate are recommended for use in combination with potassium iodide, as increasing its efficiency. Sodium, ammonium, and lithium iodides possess also, without question, some influence over the disease, but they are for most cases less efficacious than the potassium salt. Of the three iodides named, lithium iodide is apparently most prompt in its effects.

Potassium iodide is employed frequently in the well-known "sirop de Gibert," which though first popularized in the Saint Louis Hospital, in Paris, has since extensively been employed in the United States. It

has slightly been modified to suit the varying tastes of many surgeons. It is ordered in the following formula :

R	Hydrargyri biniodid.,	gr. ss-ij;	033-0.13
	Potass. iodid.,	ʒij-vij;	8-30
	Gentian. syrup. (vel	} āā f ʒij;	āā 60
	syrup. glycyrrhiz.),		
	Aq. dest.,		
	Dose. A tablespoonful in water, after eating.		M.

The syrup of licorice disguises the taste of the drug better than most of the other syrups used. With the dosage carefully regulated, a few drops (1 to 15) may be administered with advantage to children.

The following are indications for the use of potassium iodide either alone or by the so-called "mixed" method in the treatment of syphilodermata: the occurrence (1) of "late," tubercular, gummatous, or ulcerative lesions; (2) of formidable nervous, visceral, or other non-cutaneous symptoms with early or late, mild or severe syphilodermata, as, for example, grave ulcerations of the velum or the fauces with a symmetrical macular eruption, or coincidence of a generalized pustular or a papular syphiloderm with hemiplegic, aphasic, ocular, or renal complications; (3) of early or late manifestations which either assume the so-called "galloping" type, being rapidly succeeded by more and more formidable symptoms, or which exhibit the capriciousness of the disease in a reversal of the usual sequence of evolution, as, for example, when symptoms commonly counted as "late" phenomena occur within a few weeks after infection and are followed by the early symmetrical rashes; (4) of early or late symptoms occurring in cachectic, strumous, or otherwise debilitated patients. Mercury is assuredly *not* a tonic in tuberculosis commingled with syphilis.

Klingmüller¹ advocates in late syphilis the employment of iodipin, an organic combination of iodine and sesame oil. It is employed both internally and by subcutaneous injection.

The local treatment of the initial sclerosis of syphilis by complete excision, lauded by Auspitz, has been practised (since the date of his paper in 1879) by Kölliker, Zeissl, Leloir, Chadzynski, Mauriac, and others.² The result has proved conclusively that such operative interference furnishes no bar to constitutional infection. Simultaneous extirpation of all lymphatic glands in the vicinity of an initial sclerosis, with ablation of the latter and a mass of tissue about it, have repeatedly proved unavailing to prevent the occurrence of systemic infection. Chancres should not be destroyed by caustic agents of any character, as the caustics are liable to induce either irritative or inflammatory effects which may be followed by denser induration. Ointments, as a rule, are also objectionable, exception being made in the case of hemorrhagic lesions when the removal of an adherent dressing is followed by unpleasant consequences. Cleanliness with soap and water is of chief importance. There are few better local applications at this period of the disease than painting with a saturated solution in water of pyok-

¹ Berlin. klin. Woch., November 25, 1899.

² See Keyes's later communication on this subject, loc. cit.

tanin-blue. The parts may then be dusted with a dry powder, such as euophen, iodol, zinc stearate, calomel, hydronaphtol, or boric acid; or be dressed with a piece of soft lint, saturated in pure or dilute lotio nigra, or, even better, a spirit-lotion containing tannin and carbolic or boric acid. Opiated washes or iodoform (which is an anæsthetic for many ulcerative surfaces) may be requisite in painful and ulcerative lesions. When a phagedænic tendency is shown (an exceedingly rare complication of syphilitic chancres) deep cauterization may be required, and the subsequent local employment of solutions of potassic permanganate, from 2 to 10 grains (0.133–0.666) to the ounce (30.) of water.

When a primary venereal sore of any character (the initial sclerosis of syphilis or the chancroid) becomes phagedænic or gangrenous, or, even in the absence of both of these calamities, extends rapidly in depth or superficial area, cauterization should not be practised. The most effectual treatment of these complications in the genital region is by the employment of the continuous hot water-bath, aided by antiseptis. The patient remains seated in the bath (the water being of the temperature most grateful to the affected surface and with great care maintained at that degree of heat) throughout the day, or, in formidable emergencies, if carefully watched, by day and night. The bath is left by the patient only for the purpose of evacuating the bladder or the rectum. Granulation and repair gradually take place. Whenever the patient leaves the water the parts are dusted with iodoform or with iodol. By this invaluable means, in both hospital and private practice, cicatrization of extensive ulcers which reach from the genital half-way to the pubic region may be secured.

Local treatment of the syphilodermata may be demanded either by reason of their appearance on exposed surfaces, as on the face and the hands, or by reason of their obstinacy or threatening character, as when they are rapidly ulcerating. Macular and papular lesions of the face may be treated by local applications of mercury: 5 per cent. oleate; mercurial ointment, 1 to 2 drachms (4.–8.) to the ounce (30.) of cold-cream salve or of vaselin; red oxide, from 2 to 4 grains (0.133–0.266) to the ounce (30.); or ammonium chloride, $\frac{1}{2}$ to 1 scruple (0.666–1.33) to the ounce (30.) of ointment. Lotions of bichloride, 1 to 2 grains (0.066–0.133) to the ounce (30.) of cologne, are also efficient. These preparations will each be found much more valuable if used at night before retiring, and left upon the lesions during the hours of sleep, and each is well preceded by hot bathing of the surface for several minutes, as in the preparatory treatment of acne papulosa. The sulphur preparations employed for the relief of that disease will at times be found useful also in the local treatment of the syphilodermata.

Hot ablation is particularly useful in the treatment of the scaling and frequently fissured lesions of the palms and soles, the pain of the local symptoms in severe cases being greatly alleviated by this treatment. After the epidermis in these parts has been well macerated, the hands or the feet should thoroughly be dried, and the mercurial, tarry, or other salve be well rubbed in. The medicated mulls and plasters are here of value. A glove or a stocking should then be drawn over the part.

Secreting condylomata, flat papules, vegetations, etc., also require bathing with soap and water, especially when situated at the mucous outlets of the body or on the scalp. When the secretion is offensive in odor, formalin, boric or carbolic acid, thymol, or chlorinated soda should be added to the lotion. Cleanliness, indeed, is more essential to the syphilitic patient, man or woman, than to the healthy. After the cleansing or disinfecting ablution the parts should be dressed with a powder, such as dry calomel, euophen, iodoform, iodol, hydro-naphtol, bismuth subnitrate, zinc oxide, sodium salicylate, or starch. Vegetating lesions of these regions may require also pencilling with a crayon of silver nitrate. Ointments, as containing grease, are decidedly objectionable local applications.

Crusted and ulcerative lesions, large or small, are to be treated in accordance with general principles. Crusts should always be removed either by the oil and soap-and-water treatment, or with a dermal curette, after which removal the underlying ulcers should be cleansed thoroughly, pencilled with silver nitrate, filled with powdered boric acid, iodoform, iodol, or calomel, or touched with a 5 to 20 per cent. solution of carbolic acid, and then be dressed with a dilute ointment of mercuric nitrate, 1 to 2 drachms (4.-8.) to the ounce (30.). Large syphilitic ulcers are often encountered on the surface of the lower extremities, and in this situation elastic compression by a rubber bandage will greatly accelerate their cicatrization.

The syphilodermata are in general amenable to the action of the mercurial vapor-bath, which may be regarded as exerting upon them both a local and a constitutional influence. Those affecting the face are thus benefited by exposure to the metallic vapor in the "head-piece" arrangement already described. The patient may less comfortably also avail himself of the same local treatment by holding the breath and exposing the head and face for a few minutes at a time to the fumes of the mercury beneath the blanket, in the plan described as practicable at the bedside.

It is within reasonable bounds to assert that the syphilodermata, if treated locally by the measures described as useful in non-syphilitic cutaneous affections of similar type, will proceed to a satisfactory involution if the general treatment be skilfully ordered.

The local treatment of syphilitic lesions of the mucous surfaces is both hygienic and medicinal. Catarrhal conditions of adjacent mucous surfaces (vagina, nasal cavity) require attention. The parts should be kept free from all irritation (tobacco in all forms, iced and hot articles of food and drink, condiments, acetous and alcoholic fluids in the mouth; coitus and irritating injections of vulva; napkins that have been soiled over the anogenital regions of infants). Locally, the silver-nitrate crayon, used as a pencil, is effective in the management of moist patches, applied once daily or every second or third day. Occasionally stronger caustics are required, such as mercuric nitrate or nitric acid. Mouth-washes containing potassium chlorate, myrrh, and honey; 15 to 20 drops in water of Bellamy's iodized phenol; borolyptol; very dilute lotions of tincture of ferric chloride; or dilute muriatic acid, a teaspoonful to a pint of sweetened water; and carbo-

lated washes, are required in different cases. In very great soreness and tenderness of the mouth only the blandest applications are tolerated, such as thin flaxseed-tea, oatmeal-gruel as a wash, and gum-acacia water. A few formulæ are appended :

R	Potass. chlorat.,	3j;	4	
	Mel. despumat., }			
	Myrrh. tinct., }	āā 3ss;	15	
	Aq. dest.,	ad 3vj;	ad 180	M.

Sig. A teaspoonful in water as a wash for the mouth and throat.

R	Acid carbolic.,	3j;	4	
	Iodin. tinct., }			
	Glycerin., }	āā 3ss;	āā 2	
	Spts. vin. rectific.,	3ij;	8	
	Aq. dest.,	ad f 3j;	ad 30	M.

Sig. Fifteen to twenty drops as a lotion in water, for the mouth.

R	Potass. chlorat.,	3j	4	
	Aq. menth. piperit.,	āā 3vj;	āā 180	M.

Sig. Gargle and wash for the mouth; to be used slightly diluted.

The internal management of these cases is that demanded by the general condition of the system and the stage of the disease, as explained in the concluding pages of this chapter.

Prognosis.—The prognosis of syphilis is in general favorable, popular opinion on the subject being at variance with fact. Benignant syphilis may disappear without treatment.

Malignant forms of the disease may, but rarely do, destroy life. The element of treatment, both as to its character and the period of its continuance, enters more largely into the estimate upon which a prognosis rests than it does in most other disorders exhibiting cutaneous symptoms. Syphilis untreated, whether because of failure to recognize its character, or of ignorance, poverty, neglect, or dissipation, is usually grave. The same may be said of syphilis occurring in strumous, tuberculous, and cachectic subjects, and in those enfeebled by age, by other diseases, by chronic alcoholism, or by sexual excesses. Hereditary syphilis is by far the gravest form, not merely because of the tender age of its victims, but also because they, at the earliest period of their lives, are burdened with a disease which may first attack organs essential to life.

The majority of adult white patients, with hygienic environment, sooner or later recover from the acquired disease, marry, and beget in the end sound children.

CHANCROID.

This term has been adopted generally in America and England for the purpose of designating the virulent, local, contagious ulcer of the genitals, designated also as the "simple," the "soft," or the "non-infecting" chancre, the *chancrille* of French authors. Chancroid has no relation to syphilis, nor to the neoplasms with which syphilis is commonly classified. As it is, however, a disease with which the initial

sclerosis of syphilis may be confounded, and is also not merely a venereal lesion, but one which may be encountered upon the skin as well as upon mucous surfaces, it is briefly described in this connection.

Chancroids present as distinct a uniformity of feature as the lesions of vaccinia or of herpes zoster. They are thus stamped with special and readily recognized characteristics, differing in this respect from the various modes in which the first lesion of syphilis may declare its nature. The virus, for such it must be termed, of the disease is one *sui generis*, and derived exclusively from lesions of like character. This virus, which is contained in a purulent secretion, is capable of transmission by inoculation and auto-inoculation. After such successful inoculation there is no period of incubation. The results of experimental generation of the virus in human subjects indicate that the pathological process which it awakens can be determined within twenty-four hours after its introduction within the skin. At times, after accidental infection, eight and ten days elapse before the lesion of the disease is manifested, cases presumably in which the virulent secretion has remained pocketed in the orifice of a follicle or in a fold of mucous membrane, where its irritant effects have finally opened an avenue for its deeper ingress. When typically developed the chancroid is seen to be a pustular lesion, frequently multiple, of roundish outline, beginning as a pinhead-sized, turbid vesico-pustule, rapidly enlarging to a pea- or bean-sized, well-developed, projecting, yellowish, globoid elevation of the epidermis, filled with greenish-yellow pus. When located in furrows or depressions of the surface it may have a linear, oval, or even a dumb-bell shape, the latter in consequence of extension from a sulcus to overlying folds. Clinically the roof-wall of this pustule is not frequently encountered, the objective symptoms being the ulcers which represent the floors of separate lesions. These ulcers vary with the shape of the superimposed pustules, being round, ovoid, or linear, occasionally irregular in outline, with sharply defined or cut edges; they have an uneven, pus-bathed floor; a faint pinkish areola; a supple, non-indurated base; an abundant puriform secretion; and are accompanied or unaccompanied by pain, according to the degree of inflammation present. In consequence of the auto-inoculability of the discharge these ulcers frequently give rise to others in the vicinity, as when the prepuce lies in contact with chancroids of the glans.

The ulcers thus presented usually attain an average size of that of a pea or of a bean in the course of from ten to fourteen days; they then remain in an indolent and suppurative condition, showing no tendency to heal for a fortnight or three weeks; and finally they granulate, exhibiting the ordinary phases of repair. The resulting cicatrix is either transitory or, more often, indelible. In exceptional cases the ulcer spreads widely. In the groin it may attain a diameter of several inches; its floor secreting scantily; its edges lurid, undermined, purplish, or ragged; its color reddish, bluish, purplish, or leaden. Fistulous tracts and sinuses, filled with an ichorous sero-pus, radiate in dependent situations; the base of the sore is densely indurated; its career may be prolonged for years, and induce finally a systemic cachexia not different from that seen in all chronic ulcerations of

severe grade. In other cases the occurrence of gangrene, or phagedæna, changes the features of the lesion to those of other ulcers undergoing similar metamorphosis.

Chancroids may occur upon any exposed mucous surface of the genitalia of both sexes, upon the integument of the penis, scrotum, labia, thighs, fingers, perineum, peri-anal region, and, very rarely indeed, upon the face. In consequence of their tendency to relapse, their abundant contagious secretion, and their auto-inoculability, chancroids are more frequently encountered than is the primary syphilitic lesion among the filthy, the poor, and the classes that frequent hospitals and dispensaries. Among the wealthy, the well-to-do, and the cleanly this order of frequency is reversed.

The chancroid ulcer is also much more frequently complicated by surgical accidents than is the infecting lesion of syphilis. This result is partly due to the prevalence of an ulcerative type in all its manifestations, and in part to its situation. Thus, the ulcer is often accompanied by severe inflammatory symptoms, which may be aggravated both by phimosis and paraphimosis, occurring with stenosis of the preputial aperture, or with a long, lax, and redundant foreskin. Phagedæna is also a formidable complication, whether of sloughing or of serpiginous tendency, the lesion in each case losing its chancrous characteristics. It is evident also that the disease may coexist with others of a different character. Thus, a single point may simultaneously be inoculated with chancroidal and syphilitic virus; the former, without an incubative period, followed rapidly by a pustular or an ulcerative lesion; the latter, after its incubation is complete, producing the characteristic symptoms of an initial sclerosis. Chancroids may also be found coexisting with secondary and tertiary syphilitic lesions of the genitals, with vegetations, with blennorrhagic discharges and balanitis, with pediculi of the pubes, and with herpes progenitalis. Patients of the class exhibiting these lesions not infrequently present themselves at public dispensaries with three or more of these concurrent disorders.

One of the most serious complications of the chancroid is its association with a specific lymphangitis, periadenitis, or adenopathy. In this case the lymphatic trunks connected with the lesion become inflamed, indurated, and irregularly corded, with the overlying integument often œdematous, reddened, and painful. The infective process in these vessels rarely terminates by suppuration. The bubo of chancroid is more common, and this adenopathy may be either sympathetic, resulting from the severity of the process at the site of the lesion, or be virulent, due to the transmission of an inoculable pus to one or more of the glands in near connection with the source of the trouble. These different gland-complications may coexist in one person, in men more often than in women, and in about one of each four or five cases presented to observation. When inoculable pus has been formed in a neighboring gland the latter is at once converted into the seat of an abscess, the pus of which, whether evacuated spontaneously or by the knife of the surgeon, speedily inoculates the lips of the wound through which exit has been obtained. The wound and contiguous abscess-cavity then form a large chancroidal ulcer, usually inguinal in situation,

as the glands in this locality are nearest the most frequent seat of the lesion. Such an inguinal ulcer discharges a greenish-yellow pus often commingled with blood; its borders are undermined, thin, livid or purplish, and ragged; its floor is irregular, sloughy, and often covered with nodules representing the débris of glandular structure; from it depart sinuses traversing the tissues in the vicinity, often downward to the thigh, occasionally upward over the belly. When occurring in strumous and cachectic subjects, or when long neglected or mismanaged, the resulting disorder is of the most serious character, and it may surpass in duration and severity certain of the varieties of lupus and epithelioma.

These facts have an important bearing. It is true that syphilis is a constitutional disease, and that it usually occurs but once in a lifetime. It is equally true that the chancroid is evidence of a local and non-systemic disorder, producing only such constitutional effects as may all other local affections of chronic course and severe grade; but it is a blunder to suppose for these reasons that the chancroid is the milder of the two maladies. Many of its consequences are much more severe, and some of them even more malignant, than the average of syphilitic sequels, and even, as indicated above, are worse than some forms of other diseases usually classed as malignant. Greater attention should be generally directed to the truth respecting the comparative gravity of the two diseases, as there is widespread ignorance of the facts.

The **Pathology** of the chancroid, though illustrated by the researches of Biesiadecki, Auspitz, and Unna, is yet not understood to an extent that will explain its specific character. The micro-organisms discovered in all coccogenous lesions are usually abundant and readily demonstrable. Those recognized by Ducrey, of Naples,¹ are short, thick bacilli measuring 1.46 by 0.50 μ . These observations were confirmed by Krefting, of Christiania;² while the bacilli discovered and claimed as pathogenic by Unna (his observations being later confirmed by Quinquaud and Nicolle) occur in the form of twisted coils and chains, measuring 1.25 by 0.33 μ . The etiological value of these observations remains to be determined.

Anatomically, there is disclosed by the microscope a uniform, dense infiltration of the corium with elements which undoubtedly represent inflammatory metamorphosis of the connective tissue of the derma; degenerative changes where the ulceration has proceeded superficially; enlargement of vessels from thickening of their walls, often with diminished lumen; and relatively intact rete and corium at the lateral borders of the ulcer. This fully confirms the inferences suggested by a clinical study of the disease. Many roundish, circumscribed, clean-cut ulcers with purulent floors occur upon the skin that bear no relation to the chancroid disease. It is the history and career of the disease that stamp it with an individuality of its own. It is not the form and appearance of its pus-elements, but their power and potency, which make them singular.

Diagnosis.—Chancroid is to be distinguished from syphilitic

¹ Congrès internat. de Derm. et de Syph. Paris, 1889.

² Arch. f. Derm. u. Syph., 1892, Ergänzungshefte, S. 41.

chancre, but no skill, however great, and no experience, however wide, will enable the diagnostician, even when typical chancroid is present, to assert that syphilis will not follow, until the longest incubative period of the initial sclerosis of the last-named disease has elapsed without production of suspicious symptoms. The rule which necessarily follows is imperative, and, being too frequently ignored, bitter disappointment on the part of the infected individual, and keen mortification on the part of the physician, have naturally resulted. NO PATIENT SUFFERING FROM A CHANCROID CAN BE PROMISED IMMUNITY AGAINST SYPHILIS UNTIL TWO AND A HALF MONTHS HAVE ELAPSED AFTER THE DATE OF LAST EXPOSURE. Subject to this essential reserve, the diagnosis rests upon the pustular, ulcerative, and discharging features of the chancroid, its failure to indurate at the base, its auto-inoculability, its appearance without previous incubation, its more formidable localized expression of disease, and the characteristics of the accompanying adenopathy. The short-lived, superficial vesicles of herpes progenitalis, often accompanied by tingling and painful sensations, with sequels in the form of equally superficial, epidermal excoriations, are not to be confounded with chancroids; yet it must be remembered that these lesions may also precede or may accompany any form of venereal disorder. Chancroids are to be distinguished also from secondary and tertiary lesions of the genitals, and from non-syphilitic vegetations and molluscum epitheliale of the same region.

Treatment.—The most effective and ultimately the most satisfactory treatment of chancroids is by asepsis patiently carried out. Less satisfactory is the routine treatment by destructive cauterization with either nitric or sulphuric acid. Keyes recommends a previous application of pure carbolic acid, in order to benumb the part and thus render the subsequent application less painful. If employed at all, the carbolic acid should carefully be wiped from the sore before the subsequent cauterization, as the two acids will explode if suddenly brought in contact. As the slough separates the ulcer may be dressed in accordance with the general principles governing the treatment of simple granulating wounds. Special care should be taken by all practicable measures to avoid the possibilities of auto-infection. Vinous, carbolated, and opiated lotions, painting with a saturated aqueous solution of pyoktanin-blue, powders of boric acid, iodoform, iodol, calomel, bismuth subnitrate, and starch, simple unguents, and the interposition of a pledget of borated cotton between all affected and sound tissues—these measures in most cases suffice to insure relief. Pencillings with silver nitrate, though ineffective for the purposes of cauterization, often answer a good purpose in hastening repair. The prepuce may require division or circumcision.

For grave and extensive ulcerations, accompanied or unaccompanied by phagedæna or by gangrene, there is no treatment comparable in value with the hot water-bath of an average temperature of 98° F. For the details of this method the reader is referred to the paragraph devoted to the treatment of syphilitic chancre.

Phimosis and paraphimosis, when complicating chancroids, require

the surgical treatment appropriate for the relief of those conditions. For the accompanying adenopathy in chancroid disease, before supuration has occurred, rest is essential, with laxatives and gentle local compression. When there are great heat and tenderness a few leeches may be applied. After pus has formed it may be evacuated with an aspirator-needle, or by a free incision in the long axis of the swelling, followed by curetting the abscess-cavity and by the usual antiseptic dressings. Constitutional treatment by iron, quinine, cod-liver oil, and the employment of a generous diet with milk, malt liquors, or wines are often required in broken-down and debilitated persons.

The **Prognosis**, in uncomplicated cases, is generally favorable. The scar left by a suppurating gland in the groin is indelible, but it becomes less conspicuous with years. Sloughing and gangrenous sores leave deforming cicatrices, especially when occurring at the apex of the glans, to which they usually give a peculiarly truncated shape. A just reserve should be made in all cases complicated with syphilis or extensive fistulous sinuses, the latter, as mentioned above, often persisting for years.

LEPRA.

(Gr. λεπρός, scaly.)

(SATYRIASIS, ELEPHANTIASIS GRÆCORUM, LEONTIASIS, LEPRA ARABUM, LEPROSY. *Fr.*, LÈPRE, LADRERIE; *Ger.*, AUSSATZ; *Ital.*, LEBBRA; *Norweg.*, SPEDALSKHED.)

Leprosy is a disorder that has been recognized for centuries as one of the scourges of the human family. It is not known to affect the inferior animals. It is to-day endemic in many countries.

Symptoms.—In whatever form leprosy may ultimately be manifested, its appearance is usually preceded by the prodromic symptoms generally recognized as precursors of severe constitutional disease. These symptoms are: anorexia; cephalalgia; chills, alternating with mild or with severe febrile attacks; depression; gastro-intestinal disturbances; and insomnia. Their duration is exceedingly variable; in some cases patients will remember that these or similar symptoms preceded for years the earliest outbreak of lepra. In other cases but a few weeks' interval occurs between the prodromic and the successive stages of the disease. It is worthy of note that the character of the prodromata furnishes no clue to the severity and type of the oncoming disorder. The earlier cutaneous lesions of leprosy are tubercular, macular, or bullous. They may be coincident or successive, or one or two of these types may so far predominate that another may be either altogether wanting or may possess in the general pathological history but a trifling significance. It has thus been customary to make an entirely artificial distinction between cases of leprosy by assigning them to three varieties—tubercular, macular, and anæsthetic. It will be understood, then, in separately considering these three forms, that the distinction between them is useful simply for purposes of clinical classification; that mixed cases of the disease occur which it would be difficult to assign to either variety exclusively; and that each case

merely represents a predominance of certain lesions at one pathological epoch. It should be noted also that the symptoms of leprosy are remarkable for their polymorphism, a wide variation often existing between the character of two or more lesions which at any given moment are apparent. This variation is largely owing to the fact that leprosy is a general and constitutional disorder, the cutaneous symptoms of which are simply its surface-markings.

Lepa Tuberosa (TUBERCULATED, NODULATED, OR TEGUMENTARY LEPROSY).—Tubercular leprosy commonly begins in the skin with macular lesions, which are bean- to tomato-sized, reddish, brownish, or bronze-hued patches; roundish, oval, or irregular in contour; and occurring upon the face, trunk, or extremities. The skin covering these lesions is either smooth and shining, as if oiled, or is moderately

FIG. 77.



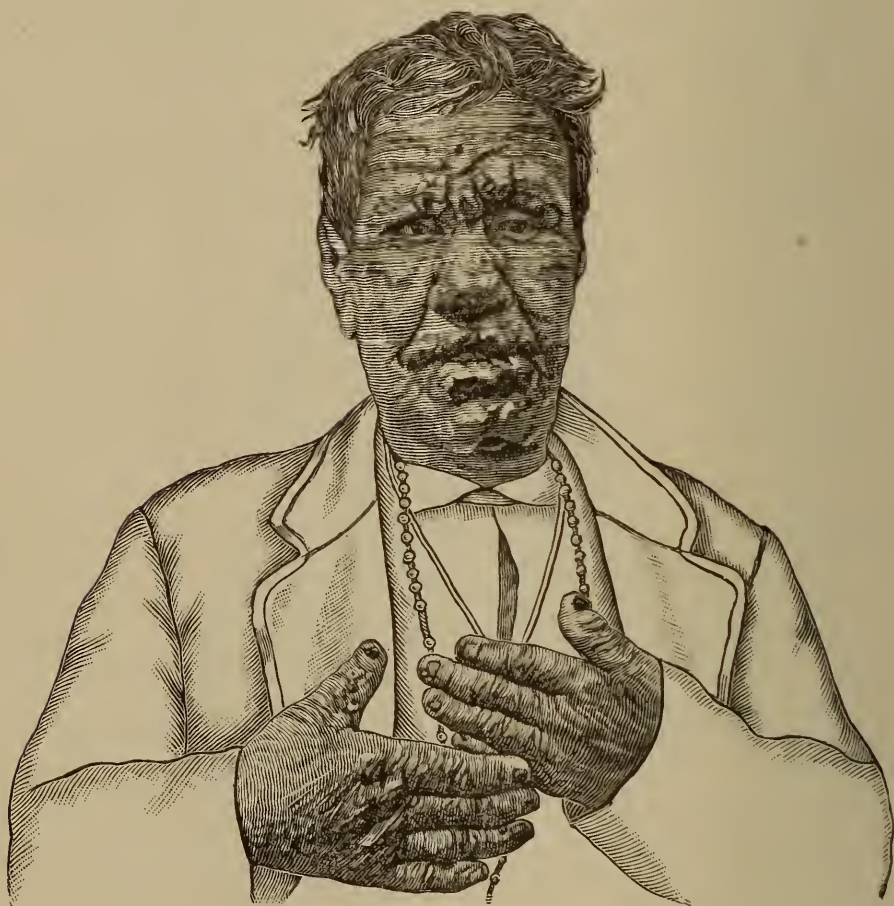
Lepa tuberculosa. (After DANIELSSEN and BOECK.)

infiltrated and elevated. After a period ranging in duration from weeks to years, tubercles (lepromata) rise from the maculations, varying in size from that of a pea to that of a nut, though they may be as large as a tomato. They are yellowish, reddish brown, or bronzed in color, often shining as if varnished or oiled, are covered with a soft, natural, or slightly desquamating epidermis, roundish or irregular in contour, and are either isolated or grouped. Numbers of very small and ill-determined nodules may often be recognized by careful examination of the skin in the vicinity of those fully developed. They may be either cutaneous or subcutaneous in situation, and be softish or firm to the touch. The eruption of these tubercles is usually at the outset preceded by fever as well as by œdema of the region involved.

The site of predilection of leprous tubercles is the face; and their massing in great numbers upon this region produces the characteristic

deformity of the countenance that has given to the disease one of its names, LEONTIASIS (face of a lion). In such faces the tubercles are ranged in parallel series above the brows, down the nose, over the cheeks, the lips, and the chin. In consequence of the infiltration and development of the lesions the brows deeply overhang the globes of the eyes, the eyelids become affected with partial ptosis, the lips pout, and the ears are so studded with tubercular masses as to project from the side of the head. The trunk and extremities, including the palmar and plantar surfaces, are then usually to a less degree

FIG. 78.



Tubercular leprosy. (From a photograph of a leper in the Sandwich Islands.)

involved. Occasionally, indeed, with extensive development of tubercles upon the face and ears, there may not be more than from five to fifty tubercles upon the rest of the body, and these either widely dispersed and isolated, or agglomerated in a single, hard, flat, elevated plaque of infiltration upon the elbow or the thigh. When confluence of tubercles occurs large plaques of infiltration may form (*lépromes en nappe*), which are elevated and brownish or blackish in shade (*morphœa nigra*). In yet other cases the condition described by Bazin as leprous scleroderma occurs, in which dense infiltrations extend to both the derm and the hypoderm. The surface of these lesions is roughened, often desquamating, rarely ulcerated.

With these cutaneous lesions there is often involvement of the mucous surfaces, especially the velum palati and the larynx. In the case of a leper affected with the tubercular form of this disease, who was exhibited at our clinic in 1879,¹ there were marked gruffness and hoarseness of the voice, and the larynx and velum were studded with pinhead- to pea-sized, ashen-hued tubercles. Others may form upon the conjunctiva and the Schneiderian membrane, the gums, the inside of the cheeks, the tongue, the palate, the fauces, and the pharynx.

These tubercles may degenerate into ulcers, or may undergo resorption and disappear, leaving pigmented atrophic depressions, or they lose their shape in consequence of partial resorption. A large plaque may flatten centrally until an annular disk is left to indicate its former site.

Among the coincident symptoms of the tubercular exanthem in lepra may be named: disturbance in the functions of sweat and sebaceous secretion, thinning and loss of the hair in the regions implicated (especially of the eyebrows) and disorders of sensibility.

It should be borne in mind, however, that the course of the disease is exceedingly slow, and that years may elapse before these several changes are accomplished. The malady, indeed, often appears to be quiescent for months at a time, after which, with the occurrence of fever, acute or subacute manifestations appear, and a relatively rapid progress is made toward a fatal conclusion. Long before the latter is reached there are usually, in tubercular leprosy (Fig. 79), intermingled symptoms of anæsthetic type, such as the occurrence of bullæ or of anæsthetic patches with and without pigmentation. Toward the last the mutilations effected by the disease may result (LEPRA MUTILANS). Phalanges of the fingers or toes, whole digits, an entire hand or foot may then become wholly or partially detached by ulcerative, atrophic, or other degeneration of skin, bones, and ligaments, hastened or not by intercurrent attacks of lymphangitis, erysipelas, septicæmia, and irritative fever.

The stadium of this type of the disease may extend through ten or more years. After its full development the dejected countenance of the leper, with his leonine facies and general appearance of cachexia, is highly characteristic.

Lepra Maculosa (ERYTHEMA LEPROSUM, LEPROUS ROSEOLA).—This form of the disease is chiefly distinguished, as its name implies, by its macular lesions. These lesions have the general character of those described as preceding the appearance of the leprous tubercles. They are diffused or circumscribed, roundish or irregularly shaped, and in color yellowish, brownish, or bronzed, often shining or glazed. They may be infiltrated, and may be slightly raised from, or on a level with, the adjacent tissues. At times they appear as lardaceous deposits in the skin, whitish, reddish, or even blackish in color, with a telangiectasic border. These patches are usually at first hyperæsthetic, but finally they become insensitive, so that a lancet can be thrust deeply into them without producing the slightest sensation.

The pigment-variations in macular lepra are noticeable. At times

¹ Chicago Med. Jour. and Exam., December, 1879, with cut showing appearance of larynx.

a distinctly anæsthetic patch may readily be limited by its lack of sensation and of normal color; at other times either symptom may fail to correspond with the area of involvement defined by the other. Thus, a palm- to platter-sized, texturally unaltered area over the thigh or the belly may suggest a vitiligo by its relatively slight pigmentation and its distinct contour, beyond which are sepia to deep chocolate tints, gradually fading toward some adjacent and similarly involved patch. Yet this area will often differ materially from that of vitiligo in other respects. Every inch of the former may be totally insensitive to the prick of the lancet, and, moreover, be of a dull, tawny, yellowish, or parchment-like hue, never having the peculiar milky-white tinge of vitiligo. Again, this anæsthesia may extend widely beyond the line traced by the pigment-anomaly, or even within the latter may vary, islets of skin capable of perceiving sensation being in cases here and there discernible. The regions chiefly affected are: the exposed parts, the backs of the hands and wrists, the forehead, cheeks, ears, dorsum of feet, and ankles.

Lepra Anæsthetica (LEPRA TROPHONEUROTICA, NERVE-LEPROSY, ATROPHIC LEPROSY).—This clinical variety, as has been described, may be commingled in its symptoms with each of the other types. With and without such commingling, however, there is commonly noted after exposure to cold, or after being subject to chills, first an eruption of erythematous patches or of bullæ, bean- to large-nut-sized, with a roof-wall constituted of the entire thickness of the epidermis, filled with a clear-tinted or blood-mixed serum, occurring usually upon the extremities. The cicatrices which follow these bullæ are atrophic patches, each often far greater in extent than the base of the original bleb, whitish, shining, glazed, or better described as of a tint suggesting the hue of mica; circular in outline, forming also the dumb-bell figure by coalescence or juxtaposition. These cicatrices are always anæsthetic, and they may coexist with macular and anæsthetic patches upon the trunk or other portions of the body: face, hands, feet, ankles, thighs—rarely the palms and soles. Neither those of the one class nor of the other, however, are disposed over the surface of the body in lines, bands, or curves corresponding with the distribution of the cutaneous nerves. Asymmetry is the rule. Occasionally, however, the ulnar and other nerves (median, posterior tibial, peroneal, facial, and radial) accessible to the touch are tumid, tender, insensitive, or as rigid as indurated cords; fusiform, reddish-gray swellings may be recognized with the naked eye along the nerve-tract, with translucent and gelatinous aspect. General atrophic cutaneous symptoms follow: the skin becomes dry and harsh; there is manifestly little or no sebaceous product; the sweat is scanty; the muscles atrophy; the hairs fall; the lymphatic ganglia enlarge; the skin of the face seems tightly stretched over the bones. As a result of deforming atrophy of the eyelids epiphora and consequent orbicular changes ensue, and the parted lips permit constant escape of saliva. The fingers are half-drawn into the palm of the hand; the nails are distorted, and, later, ulceration occurs (Fig. 79).

The ulcers are irregular, oval, roundish, linear; covered with thin, blackish, flattened, tenacious, never rupioid, crusts; their bases are

soft; their floors covered with a pultaceous débris often mixed with blood; the whole usually insensitive to every foreign body and external application. Lastly, the symptoms of *lepra mutilans* may occur, digits, or portions of the carpus, metacarpus, or corresponding parts of the foot, being detached from the body.

Death may ensue, at any time during the course of the disease, from septicæmia, exhaustion, or any of the intercurrent affections to which a patient in such a condition is particularly disposed. Thus, a leper was accidentally choked to death in San Francisco by some perversion of the function of deglutition. The disease, however, in the anæsthetic form is said to last from eighteen to twenty years, and is thus less rapidly fatal than the tubercular variety.

FIG. 79.



Anæsthetic leprosy with mutilating results. (From a photograph of a leper in the Sandwich Islands.)

Considering the several clinical varieties of leprosy named above, and the mixed forms resulting from a commingling in some cases of the features of all varieties, the result is merely an analysis of the symptoms in an enormous clinical field. There are not, in fact, any forms or varieties of this disorder; there is but one disease, which exhibits itself in widely differing manifestations, and these at one time and in one country assume a predominant phase, while with a different environment and in another race other phenomena appear. Thus, *lepra tuberosa* is reported in from 50 to 75 per cent. of patients affected with the disease in the north of Europe, and in from 10 to 20 per cent.

of those in tropical countries; while anæsthetic lepra in the geographical limits last named is represented by two-thirds of patients, and in the northern latitudes by less than one-third. "Mixed forms" are less often reported than others, but as a matter of fact are the more often observed. The reason for this apparent anomaly lies in the fact that really pure cases of any form are rare. It is best to look upon the expressions of lepra as it is accepted to regard the phenomena of syphilis: in each there is a single morbid principle; there are in both no true varieties; and the external symptoms differ chiefly because of special accidents of environment, of race, or of individual peculiarities.

Looking at the variant symptoms of lepra, a wide range occurs in all stages. In the evolution of the disease there is a usual order of fever, eruptive symptoms, and ulcerative or destructive sequels. In the prodromic period there are often chilliness, profuse diaphoresis, insomnia, inappetence, diarrhœa, vertigo, and even a bullous efflorescence upon the surface. These prodromata are rarely wanting, and, after lasting for weeks, months, or years, are followed by sensations of chilliness, with remitting or intermitting febrile symptoms, the temperature rising from 100° to 105° F. The tongue becomes of a reddish hue, the listlessness and sluggishness continue, and the typical cutaneous lesions of the disease (leprous spots) appear, commonly on some portions of the face, with or without œdema. In some cases the prodromic symptoms and fever and chilliness are either absent or, what is more probable, are unnoticed, and then the disease may be first recognized by pains of a lancinating character, tenderness, and aching, especially along the course of the ulnar, peroneal, median, saphenous, or other nerves; or the result may be hyperæsthesia, anæsthesia, or pricking, tingling, and similar sensations in regions supplied by special nerves. The greatest variation is observed in the length of time during which these early symptoms, with more or less vagueness of expression, exist. Later, tubercles, nodules, bullæ, macules, hyperæsthetic and anæsthetic patches appear with gradual development of other and non-cutaneous symptoms, paralysis, exaggerated tendon-reflexes, and atheromatous papules upon the palpebral membranes and cornea. At times there results an ulcerative keratitis. In every large leper-hospital the number of inmates, both men and women, who have become totally blind in consequence of the ravages of the disease is considerable. In many, too, nodules appear over the chest, genital regions, and extremities, as well as upon the mucous surfaces of the mouth and respiratory tract. The voice becomes raucous, while recrudescences of the disease occur either along the one (tubercular) or the other (anæsthetic) line toward the final stages of degeneration and mutilation.

The disease is seen in all typical forms, even in regions where leprosy is least prevalent. There may be a genuine leprous pachydermia with enormous increase in the volume of the hands and feet, accompanied by severe onychia and paronychia, and deep ulcerations about the nails. In some cases tumefaction of an entire limb results, strongly resembling an elephantiasis. The nose may be stuffed with leprous tubercles; and a large number of cutaneous symptoms of the most varying type develop in and upon the leprous skin as the result of secondary infec-

tion, of accidents, or of invasion by pus-cocci, etc., for it must be remembered that in most cases the leprous belong to the filthy and impoverished classes of society. Thus, there are often developed eczemas, erythematous and achromic and hyperchromic spots and disks, annular lesions resembling those seen in syphilis, bullæ rapidly becoming gangrenous (*erythème polymorphe lépreux bulleux et escharotique*, of Leloir), nodules of the usual size and hue of those in lepra (pinhead- to nut-sized, pigmented, reddish brown, copper tinted, glazed, shining as if oiled), and enormous infiltrations within and below the derma, even the production of large tumors of leprous tissue.

The generative apparatus may seriously be involved, the uterus, Fallopian tubes, and ovaries being the seat of leprous nodules or diffuse lepromatous infiltrations; as may be also the testicles, prostate gland, and penis. The breasts are also stuffed with tubercles; but they, as also the other organs named, may simply waste under the influence of the disease. Sexual power is retained longer than is commonly believed. In the colored races the eruptive symptoms are tinted in yellowish and reddish shades, a result due to contrast with the hue of pigmented skins.

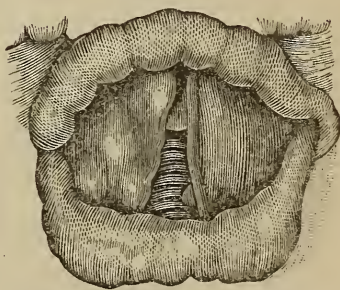
Etiology.—Leprosy is a contagious and infectious parasitic disorder produced by the bacillus lepræ. This organism was discovered by Armauer Hansen in 1874, and is present in large numbers in tubercular forms of the disease, being relatively absent in anæsthetic lepra. It strongly resembles the bacillus of tuberculosis. These bacilli have been found in the dwellings and clothing of lepers as well as in the dust of apartments occupied by victims of the disease.

Secretions of a leprous patient containing bacilli or their spores are the usual vehicle by which the disease is transmitted. The question of the inheritance of leprosy may be regarded to-day as in much the same position as that relating to the inheritance of tuberculosis; no foetus, no newborn living child has been known to exhibit the symptoms of either disease. Men are more often affected with the disease than women. Infection is more common after the second decade, though children are occasionally among its victims.

The geographical distribution of leprosy is widely extended. In countries where it has not previously existed its appearance is invariably due to the infection of sound individuals by lepers first exhibiting symptoms in a country where the disease is prevalent. Neisser formulates the law of its prevalence by stating that the number of lepers in any country bears an inverse ratio to the laws executed for the care and isolation of infected persons.

The disease exists in the interior and throughout the seaboard regions of Africa, including Egypt; in Arabia, Syria, Persia, China, Japan, and India; in the islands of the Mediterranean, Black, Caspian, and China Seas, of the Indian Ocean, and of the Australasian Archipelago; in Norway and Sweden,

FIG. 80.



Larynx of a patient affected with lepra tuberosa. (One of the authors' cases.)

Iceland, Russia, Turkey in Europe, Spain, France, Portugal, Greece, and Italy; and sporadically in Germany, England, and the smaller European States; in North, Central, and South America, and the West India Islands. In America special attention has been directed to the subject by the existence of the disease in an endemic form in the Sandwich Islands, with which the Pacific States sustain close commercial relations; by its occurrence among Chinese immigrants in San Francisco and other portions of California; by cases reported from New Orleans by Burns,¹ Bemiss,² Jones,³ Dyer, and Solomon,⁴ and by various reports of sporadic cases observed in Minnesota, Maryland, Illinois, Nebraska, New York, North and South Dakota, Pennsylvania, Iowa, New Jersey, Ohio, Wisconsin, and other States of the Union, by Grönvold, Hoegh, Bendeke, Rohé, Piffard, Elsberg, Atkinson, the authors, and others. White and Graham have contributed to the history of the colony of lepers in Tracadie, New Brunswick. More recently Morrow,⁵ of New York, and Bracken,⁶ of Minnesota, have added valuable data to the statistics of the disease as it exists in this country.

With this wide geographical distribution, the disease exists endemically in certain countries, and also in certain regions of the same country, with greater frequency than in others. All attempts, however, to connect its origin with malaria, with a residence near inundated sea-marshes, with the ingestion of a diet consisting largely of

FIG. 81.

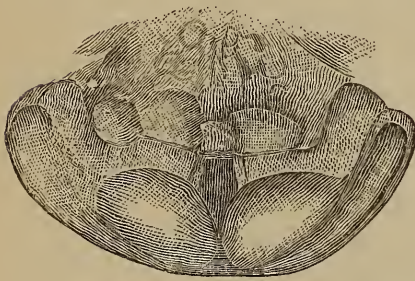
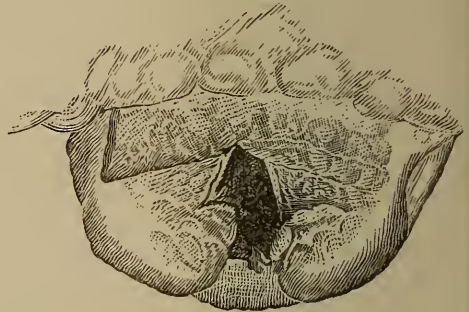


FIG. 82.

Larynges of lepers affected with *lepra tuberculosa*. (ELSBERG'S cases.)

fish, or of a diet from which salt largely has been excluded, have failed of recognized success. The disease, however, seems to spread more rapidly in damp and cold, or warm and moist climates than in temperate countries. It is true that probably the larger number of all living lepers are those who have been poorly fed and otherwise subjected to the most insalubrious of influences, but the disease also attacks, though far more rarely, persons whose social position and hygienic surroundings are of the best. It occurs in both sexes—though more frequently in males—and at all ages; and, despite all effort to show the contrary, bears no relation to syphilis. Lepers, however, become syphilitic if infected with that disease, precisely as they may and do acquire variola,

¹ Arch. of Med., December, 1881.² N. O. Med. and Surg. Jour., April, 1880.³ Ibid., March, 1878.⁴ Trans. Louisiana State Med. Assoc., 1879.⁵ Twentieth Century Practice of Medicine, vol. xv., p. 403.⁶ "Are National Leprosaria in the United States Desirable?" Minnesota State Board of Health, 1901.

varicella, morbilli, erysipelas, and phthisis. The Hebrew Scriptures are often interpreted as showing that the disease among the Jews in Palestine was regarded by them as contagious and so treated. The modern student of these writings will, however, be convinced that this interpretation is erroneous. The leprosy of the book of Leviticus not only includes lepra, as that term is understood to-day, but also psoriasis, scabies, and other cutaneous affections. The leper, in the eye of the Mosaic law, was ceremonially unclean, and capable of communicating only a ceremonial uncleanness. Several of the narratives contained in these books bear witness to the fact that the Oriental leper was occasionally seen doing service in the courts of kings, and even in personal communication and contact with officers of high rank.

Pathology.—The bacillus of leprosy is a delicate rod-shaped parasite from one-half to three-fourths of the diameter of a red blood-corpuscle in length, and about one-fifth as broad as long. The bacilli of leprosy are morphologically almost identical with those of tuberculosis, but are found in affected tissues in vastly greater numbers, appearing usually in clumps, and responding more promptly to staining and decolorizing agents. These micro-organisms have been found in nearly all the tissues of the body, and especially in the skin, mucous membranes, interstitial tissue of the peripheral nerves, in the cartilages, cornea, spleen, liver, lymphatic glands, sebaceous glands, and hair-follicles, also less abundantly in the testicles, spermatic cords, ovaries, and walls of the blood-vessels. They do not occur in the muscles, spinal cord, bones, or joints, and are wanting in many secondary inflammatory lesions, such as bullæ on the surface of the skin. They are rarely found in the epidermis, and though it is claimed that they are visible in the blood, their discovery in that fluid has not been confirmed. The bacilli are not found in physiological secretions unless these be pathologically altered by an organ or membrane affected with leprous infiltration. They have never been found in urine or in menstrual blood.

The parasites are most numerous in comparatively recent but fully developed nodes of the skin. Such a node on section shows in the centre a brownish mass or "globus," which sometimes can be shaken out of the surrounding tissue, and which on examination proves to be composed almost entirely of masses of bacilli. Even in the diffuse form of infiltration the bacilli are usually found in groups or masses, but they may be disseminated through the tissues.

According to Hansen and Looft, the bacilli are almost invariably situated within a "lepra-cell," or occasionally in endothelial cells of the

FIG. 83.



Bacilli of leprosy: *a*, epithelial scale. About $\times 1200$. (From one of the authors' patients.)

vessels, or in white blood-corpuscles. Unna and others, on the contrary, have found the bacilli without the cells. Most investigators agree with the observations first cited, but think it probable that there are a few free bacilli, and also some in the lymph-channels.

Unlike the bacilli of tuberculosis, those of leprosy apparently do not live or grow outside the living human body. Campana and Ducrey obtained cultures, as they supposed, of the lepra-bacillus, but did not verify their results by inoculation-experiments, and their conclusions are not generally accepted. Practically, the bacillus has not yet been cultivated. Attempts to inoculate lower animals with leprous tissue have given no definite results. Numerous attempts have been made to inoculate human beings with leprosy, but the disease developed in only one of the inoculated individuals, and as he was a member of a leprous family the result cannot be considered conclusive.

The introduction into living tissues of leprous material containing bacilli results simply in a local inflammation such as would be produced by the introduction of any inert substance. In such experiments the leprous tissue, which had been hardened for months in alcohol, was equally effective with the fresh tissue. Besnier and others believe that the bacilli die with the tissue in which they have lived, and thus account for the failure of culture- and inoculation-experiments. The slight viability of the bacilli is largely responsible for the usual benignity and slow progress of the disease.

In tubercular leprosy the chief histological changes are seen in the corium, the nodule being made up chiefly of granulation-tissue similar to that seen in lupus and syphilis; but the leprous tissue is less vascular and consequently undergoes formative and retrogressive changes less rapidly; the cells are larger than in the two other diseases named, and do not form in nests, as in lupus. The cells, which probably originate in endothelial cells of the vessels or in migrated cells, are seen in varying sizes and usually filled with bacilli to form the "lepra-cells." Giant-cells are also seen.

The infiltration may be diffuse as well as nodular, and is most marked at first about the vessels, glands, and follicles. Later it may obliterate the papillæ and their line of union with the rete, and extend to the subcutaneous tissue. The external and middle coats of the vessels are infiltrated and thickened and their lumen narrowed. The sebaceous and coil-glands and the follicles are involved early, at first undergoing infiltration and hyperplasia, later degenerating and disappearing. The epidermis is involved secondarily only, and may be thus thinned and atrophied or broken in the formation of ulcers.

In macular and anæsthetic leprosy Hansen and Looft¹ state that "the macules are, like the nodules, leprous infiltrations of the cutis, consisting of round epithelioid and spindle-cells, the latter being more numerous the greater the age of the macule. These infiltrations appear to proceed from the vessels. Lepra-bacilli are always present, but are most numerous in the younger macules. In the young not as yet anæsthetic macules the nerve-twigs appear unchanged; in the older

¹ Leprosy in its Clinical and Pathological Aspects, English translation by Walker. London, 1895.

ones they are usually affected." The essential nerve-changes are an infiltration of cells containing bacilli within the external sheath and between the nerve-fibres, resulting in a gradual disappearance of the latter as a result of pressure produced by the great increase of interstitial connective tissue. The irritation of the nerve-fibres in the early stages accounts for the pains and hyperæsthesia; the nerve is also increased in size, often to a marked degree. Later there are atrophy and shrinking of the nerve, of which many of the original fibres have been destroyed and replaced by connective tissue, with resulting anæsthesia. The peripheral nerves are thus frequently affected, but in the brain and cord leprous changes have not been demonstrated. In a few cases of anæsthetic leprosy degeneration and atrophy of the posterior columns, posterior roots, and spinal ganglia have been demonstrated, as well as other changes probably due to an associated tuberculosis which is not infrequently present.

Regarding the disappearance of leprous lesions and tissue, Hansen and Looft say that in both the nodular and the maculo-anæsthetic forms "the bacilli in the leprous products break up into granules which finally disappear, and there remains of the leprous products only a scar in which nothing leprous can be recognized. Occasionally this takes place in all the affected parts, and there remains only a widespread anæsthesia, the result of the nerve-affection; and in the maculo-anæsthetic form this is the regular termination of the disease. In both cases the leprosy is completely healed." Jeanselme¹ concludes that after complete invasion of the subject the bacilli of lepra may utterly disappear, leaving only a sclerosis in their track.

Diagnosis.—Apart from the history, present and previous places of residence of the subject of the disease, and the clinical symptoms exhibited, the diagnosis of lepra is to be established by the presence of lepra-bacilli. These organisms may be recognized in the tissues, in serum obtained artificially from involved regions, in blood made to exude from lepromatous nodules, and in the secretions of ulcers. Spronck asserts that the agglutinating power of the serum of the leprous produces a characteristic reaction in the bacilli reproduced by cultures obtained by Hansen's method.

In well-marked cases the recognition of leprosy is simple. In its prodromic periods no suspicion of its existence would be awakened in countries where the disease is not endemic.

From syphilis, which is also a disorder the lesions of which are polymorphic in character, lepra can be distinguished by its much greater chronicity; its larger and brownish-yellow, glazed tubercles; its frequently paræsthetic and anæsthetic symptoms; its bullous lesions, rare in acquired syphilis; the far more extended areas of its erythematous macules; its blackish crusts, lacking the rupioid aspect of those in syphilis; its leathery, mica-tinted cicatrices; and the characteristic leonine facies of its tubercular forms.

Morphœa and vitiligo are unattended by constitutional changes, and more particularly exhibit no hyperæsthetic nor anæsthetic symptoms in the affected patches. The atrophic and often deeply pigmented condi-

¹ La Presse méd., Dec. 15, 1900.

tion of the skin in the final stages of pityriasis rubra, associated with the emaciation and febrile condition of the patient, might for a time mislead the observer who had not a full history of the case. Multiple sarcomata, especially upon the face, are followed by much more rapid degeneration and a fatal result.

All lesions of erythema multiforme can readily be distinguished from those of lepra by the absence of hyperæsthetic or of anæsthetic symptoms. Syringomyelia is differentiated by its display of lesions only in regions where there is also muscular atrophy; by the much greater extent and lack of definition of areas of perturbed sensation; by diminution of the tendon-reflexes, which may be exaggerated in lepra; by a marked predominance of symptoms in the upper as distinguished from the lower extremities; and by the frequent presence of scoliosis. The nodules of lupus are not symmetrical, are far softer, and are much more often grouped than those of lepra. Further, they never have the size of the larger leprous tubercles, and never have the peculiar pigmented, brownish, and oiled or varnished aspect of leprous nodules.

Finally, the diagnosis of leprosy requires not only clinical symptoms, but also a definite contagion. Whether a history of transmission from one individual to another be or be not obtainable, it is certain that no person ever manifests leprous symptoms who has not been infected by some victim of the disease.

Treatment.—One of the most important considerations relative to the therapy of leprosy is that requiring the segregation and isolation of all lepers from contact with the uninfected. In some countries, those particularly where leprosy prevails, wholesome laws enforce this separation of the infected, and charitably provide also for the care of the wretched victims of the disease. In America, where leprosy, in consequence of its rarity, has not yet awakened the attention of legislators beyond the point of forbidding the entry of infected persons, the proper care of lepers in a community only too ready to take alarm even at the name of the disease is a serious matter. Many of the public hospitals for the care of the sick poor refuse to receive lepers. In several States of the Northwest the officers of health-boards are powerless to make proper provision for the care of a leper whose case is brought to their attention. In some of the American colonies provision is made for the care of lepers, as in Hawaii.

The child of a leprous woman should be removed from the mother after birth and not given another woman's breast.

No remedies are known to have a directly curative effect in leprosy. As a consequence, the treatment of the disease is that suggested to the intelligent practitioner by the indications in each case. Most important, when the patient happens to reside in a district where the disease prevails, is an immediate change of residence and climate; the adoption of a highly nutritious diet; and the exhibition of roborant remedies, including steel, quinine, cod-liver oil, and often the moderate use of wines and malt liquors.

The injection of antivenene and other modes of serum-therapy have not been followed by results confirmed by a sufficiently wide experience. The cinchonas and salicylates are indicated in febrile con-

ditions. Mercury, arsenic, the iodine compounds, hoang-nan in pills of 3 grains (0.266); creosote in half-drop doses (0.033); the oil of cashew-nut, gurjun balsam, chrysarobin, pyrogallol, resorcin, 10 per cent. solution of salicylic acid in oleic acid (Arning); ichthyol, and chaulmoogra oil, internally and externally, have all been employed with varying success by different practitioners; but an unprejudiced review of the maximum of results thus obtained establishes the conviction that no one of the remedies named may be regarded as exercising a controlling influence over the disease. Most of them have been employed by physicians sufficiently wise to enforce simultaneously the most generous tonic regimen, thus clouding with doubt a belief in the part played by the medicament in the production of the result. In the case of a leper and his daughter in Nebraska, who were treated for some time with chaulmoogra oil, marked benefit was noticeable in the course of a few months, a result probably due to the salubrious surroundings of a farm in the country.

Every secreting ulcer and open surface in the person of a leper requires prompt and thorough disinfection with a solution of formalin or mercuric chloride, or other parasiticide, in order to destroy the bacilli commonly present. Baths are of great value in these cases, and they may be medicated with any desired substance. In the local treatment of leprous tubercles, ulcers, and other lesions the simple principles, dermatological and surgical, governing ordinary cases are not to be forgotten. Disinfectants, carbolic and boric acids, bland unguents, inunctions, and local stimulation of the skin are as useful, when properly applied to the leprous, as to the syphilitic, the cancerous, and the scorbutic patient.

Prognosis.—The future of the leper is indeed dark. The disease is malignant in character, and, however protracted, a fatal result is usually inevitable. Still, with a change of climate and improved hygienic conditions much may be accomplished. There can be no question that the Scandinavian lepers who have removed to the United States have been greatly benefited by the change. This, indeed, was the opinion of the late Professor Boeck, who visited Minnesota, and there studied the history of eighteen leprous immigrants who had come from Norway. He believed that the change in some cases would work a complete arrest of the disease. A careful study of the history of leprosy in America will induce the belief that such a favorable result can be anticipated after residence in the Northwestern States, as well as in other portions of the country.

The SARTIAN DISEASE (TASCHKENT-GESCHWUR) is an infectious granuloma, described by Heiman, and microscopically examined by Rudniew. It occurs in Taschkent, or Taschkend, a market-town of Asiatic Russia, west of the Caspian Sea. The disease affects the face, the upper extremities, and the trunk, avoiding always the palmar and plantar regions. Reddish macules develop into nodules, which desquamate, coalesce, degenerate, and leave crusted ulcers, which may cicatrize.

FRAMBESIA.(Fr. *framboise*, raspberry.)

(YAWS, PIAN, LEPRO FUNGIFERA, TOBOE, POLYPAPILLOMA TROPICA, SCHWAMMFORMIGE, BUBA OR BOBA, BOUTON D'AMBOINE TONGA, COCO, FRAMOSI, TETIA, LUPANI, TONO, PERUVIAN WART, PARANGI.)

Frambesia is an infectious disorder existing as an endemic malady in certain tropical countries, and affecting for the most part individuals of the African race.

Contributions to the literature of this subject have been made by Pison Bontius, Hillary, Winterbottom, Schilling, Milroy, Nicholls, Imray, and Bowerbank. The description here given is largely borrowed from a paper¹ on the subject contributed by Pieriez to the Pan-American Medical Congress held in Washington in 1893.

Symptoms.—There are two defined stages of the disease: one of incubation; another of invasion. In the first stage there may be moderate febrile symptoms; in the second stage there are usually malaise, articular pains, tenderness and fulness of the lymphatic ganglia, and an eruption consisting of tubercles which requires from two to nine days for complete evolution, the disease lasting from two to six months in mild cases, and in severe forms for two years or more. The aggravating influences determining the longer periods of the disease are: lack of hygienic surroundings, improper medicinal treatment (*e. g.*, the administration of mercury under the supposition that the disease is syphilitic), and the dyscrasias in general. The eruptive phenomena are described under several heads:

(a) Pian dartre (“yaws cacca”), in which there occurs on the face and extremities a furfuraceous desquamation which is usually well defined and limited to patches ranging in size from that of a small coin to that of a pea. This desquamation may extend over the entire surface of the body. In some instances, when the scales are removed, papillary projections are visible beneath.

(b) The yaws tubercle. The tubercle of frambesia varies in size from that of a millet-seed to that of a small coin, covered at first with a thinned epidermis and later forming an excrescence of verrucous type with numerous aggregated pinkish points which furnish a secretion, desiccating later into a greenish-yellow, bulky crust, shaped like the shell of the limpet and resembling in color and consistency lumps of yellow beeswax. Reddish puncta, due to small hemorrhages, may here and there be visible at the surface. Crusts are less likely to form in regions near the mucous outlets of the body (vulva, anus), and at points subjected to friction (axillæ, groins). There may be a delicate halo about each crust. The odor is mawkish. A degree of symmetry may be perceptible. By confluence a few unusually large excrescences (“mama pian”) may form. While the larger are thus coalescing and enlarging other smaller tubercles may shrivel and disappear.

¹ Transactions of the First Pan-American Medical Congress, Washington. Government Printing Office, 1895. Part II., p. 1764.

(c) Pian gratelle ("guinea-corn yaws"), which is the rarest form of all, is characterized by the development of watery-looking, light purplish-hued tubercles destitute of crusts.

(d) Crapeaux ("crab-yaws"). In the secases fissures occur in the tubercles which are usually located on the soles of the feet and are aggravated by the exposure of these organs when walking barefoot.

(e) Ringworm yaws. The eruption may occur in circular ridges surrounding an unaffected centre, the original lesions of this enclosed area having undergone a species of shrivelling. When this process is completed by the fall of the crusts no scars are left, the epidermis being pigmented as after the involution of syphilitic tubercles.

Under unfavorable conditions ulceration of the tubercles occurs, leaving raw patches (often on the anterior faces of the legs) ranging in size from that of a small coin to areas having a diameter of several inches. Their edges are punched out in appearance; the floors are granular and bright reddish in hue.

Diagnosis.—The distinction between frambesia and psoriasis and eczema is readily effected by consideration of the distinctive peculiarities of the several disorders named. It is chiefly the distinction from syphilis that has engendered confusion in the past. The following are important points of distinction: syphilis often, yaws rarely, attacks the mucous surfaces, the last-named disease much more rarely involving the lymphatic glands; there is usually itching in the yaws eruption; there is no characteristic copper color in its eruptive features; yaws does not affect the bones save in the continuity of long-standing ulceration of the skin; the subject of yaws is susceptible to indefinite auto-inoculation; yaws though common in children is not inherited; healthy parents may have infants seriously affected with frambesia; lastly, the two diseases have been noted as of concurrence in the same person.

Etiology.—The disease is endemic in certain tropical countries, occurring chiefly in the black races and especially among the filthy, though it is seen also among the whites.

The disease is caused by a specific microbe—a rod-shaped bacillus—occurring singly and also in couplets and triplets, and being about $2\ \mu$ in length and $0.5\ \mu$ in breadth. It is readily cultivated in nutrient jelly, and is capable of transference, with production of yaws not only upon the skin of man, but also upon that of the lower animals, especially the cat.

Treatment.—The disease yields readily in the simpler cases to mild parasitocides; in severe cases tonics are required internally, such as iron, quinine, and strychnine.

The **Prognosis** is favorable save in broken-down subjects.

PARANGI.

Kynsey reports upon the nature of this disease, which is thus designated in Ceylon, where it prevails.

It appears to present mixed features of syphilis, land-scurvy, yaws, pellagra, lupus, leprosy, scrofula, and less severe disorders, existing as an endemic in certain provinces of the island. It is clear, from the

description of the symptoms recorded, that the nature of the disease has not been recognized. It was first described in 1868 by Loos, and is now regarded as due to numerous causes, such as malnutrition induced by impure food and water, wretched hygienic surroundings, and infection from the discharges from ulcers.

There is, according to Christie,¹ an incubation-period of from two to eight weeks, followed by the appearance of an ulcer over any bony prominence—the initial sore. This period is succeeded by malaise and pyrexia, the premonitory fever lasting from two to eight days, and is followed by the exanthem, which appears first over the face, and later upon the body. This eruption may be vesicular, pustular, pustulo-tubercular, or squamous, superficial ulcerations forming which become crusted subsequently. Rupoid, furuncular, and psoriasiform features are common in the course of the malady. Condylomata may appear at the anus. Ulcerations succeed later of a more formidable character, involving the nose, palate, and cheeks; the digits may be lost by gangrene; blebs occur; pricking-pains are experienced; there may be anæsthesia of some part of the surface, associated with bronzing and glazing of the skin. The patient may perish of some intercurrent disorder or from exhaustion. The duration of the disease is said to be from two to eight years.

Treatment has been successful with the cautious employment of mercury and potassium iodide, and strict observance of the rules of hygiene.

DONDA NDUGU.

Donda ndugu (“Brother ulcer,” or “Ulcer that clings”) is a disease existing in Central and Eastern Africa. Christie,² who first described it, believes it to be identical with that from which Livingstone suffered in 1870.

The disease is confined to the lower extremities, and it occurs among the natives chiefly in the rainy season after a march toward the coast.

Donda ndugu is characterized by the appearance of whitish papules springing from a boggy swelling, seen often near the toes, heel, or dorsum of the foot. When incised, an extensive, deep-seated slough is found beneath the healthy tissue, bathed in an ichorous discharge. Severe rapid-spreading ulcerations and death may ensue. Livingstone extracted the ova of a species of maggot from such lesions in his own person; but Christie failed to discover them in his cases.

The **Treatment** is local, by the use of antiseptics after incision.

VERRUGA PERUANA.

(PERUVIAN WART.)

This is a specific disease, both endemic and at times epidemic, occurring for the most part in the mountains of Peru, and communicable by inoculation. There is a prodromic febrile stage, followed by the appearance on the skin of maculo-tubercular, softish, tender, hemi-

¹ See Anderson's Treatise on Diseases of the Skin.

² Ibid.



Prefungoid Stage of Mycosis Fungoides.

(From a painting.)

spherical tumors, which may attain the dimensions of a large nut. Hemorrhagic effusions occur as a result of fissures in the epidermis covering the lesions, at times incoercible and leading to fatal anæmia in severe cases. The lesions may be few or numerous; may occur on the several parts of the head and extremities (rarely on the trunk), and may eventually desiccate or break down into ulcerations. A fatal result may occur at any stage from hemorrhage, or the disease may be relieved in the course of a few months. It is said to attack whites more often and with greater severity than negroes.

Hirsch¹ and others have described the disease, an outline of which is given by Crocker, who states that the mortality is from 6 to 10 per cent. among the natives; and from 12 to 16 per cent. among the whites, or, in epidemics, 40 per cent. Bacilli have been recognized, and may be the cause of the disorder.

MYCOSIS FUNGOIDES.

(Gr. *μύκης*, a mushroom.)

(GRANULOMA FUNGOIDES, GRANULOMA SARCOMATODES, INFLAMMATORY FUNGOID NEOPLASM, ECZEMA TUBERCULATUM, FIBROMA FUNGOÏDES, LYMPHODERMIA PERNICIOSA, SARCOMATOSIS GENERALIS. *Fr.*, LYMPHADÉNIE CUTANÉE.)

This disease was first described in 1814 by Alibert, as "*Pian fungoïde*." Its symptoms resemble that affection, though not in any way related to it.

The disease is rare; less than two hundred cases have been recorded in literature: but so many of these have been carefully observed and fully reported that all the symptoms of the disorder are fully established. An attempt has been made to distinguish between two forms. There is, however, but one.²

Symptoms.—For convenience in description the symptoms may be grouped roughly in three stages, which, however, do not always occur in regular succession, and of which the first and second may never be manifested.

The so-called "**PREMYCOTIC STAGE**" (ERYTHEMATOUS PERIOD [Bazin]; STADIUM ECZEMATOSUM [Kaposi]) is characterized by the occurrence of a series of cutaneous phenomena of different types, which have been described as resembling, if not identical with, eczema, lichen, erythema, pityriasis rubra, psoriasis, urticaria, furunculosis, and other congestive and inflammatory cutaneous affections. In a recent contribution based on a personal experience in thirteen cases and a review of the literature of forty-eight cases in which these early phenomena were described, we stated³ that we believed, in common with a few other investigators, that these early dermatoses, though differing considerably in clinical type, have many characteristics in common, and are the varied expressions of a definite morbid process. The term **PRE-FUNGOID**, employed by Morrow, would better designate this stage than

¹ Handbook of Geog. and Hist. Pathology, vol. ii., p. 114.

² Cf. Max Walters' monograph, with sixteen illustrations. Stuttgart, 1899.

³ Jour. Cutan. and Gen.-Urin. Dis., June, 1899.

the generally accepted term *premycosis*. The mischief is undoubtedly declared with the earliest pruritic symptoms, and the skin-eruptions in the early periods of mycosis should be considered as significant expressions of a general disease as the tumors themselves.

The earliest phenomena vary greatly, and may imitate any of the above-named dermatoses. The most frequent lesions, however, are in the form of round or circinate, sharply defined, erythematous patches, usually characterized by scaling and by itching. These areas are commonly from one to six centimetres in diameter, but may be of any size, and in rare instances (as in one of our cases) the redness and scaling may be universal. The lesions usually are dry; but at times may be moist, crusted, or even the seat of small papules and vesicles. The color varies through the different shades of red, often combined with tints of brown or purple. As the lesions persist thickening and infiltration of the skin are noted, and the patches become more sharply outlined, more distinctly circinate in contour, and, by extending peripherally while clearing in the centre, begin to assume the gyrate and fantastic figures so characteristic of the disease. Itching is usually a pronounced feature, but may be absent. The course of the lesion is capricious, even more so than in eczema. One or all of the patches may suddenly disappear spontaneously, only to return without apparent cause in old or new sites, and after intervals of days or months. Treatment, either constitutional or local, seems to have almost no influence upon the course of the lesions. This stage, during which the patches come and go, may last a few months or several years before the appearance of the more characteristic areas of infiltration.

In what may conveniently be called the second stage, or *PERIOD OF INFILTRATION* (*LICHENOID PERIOD* [Bazin, Vidal, Brocq, Fabre]), circinate, sharply defined, elevated plaques and nodules appear, either in the site of previous lesions or independently of them. The nodules are pea-sized or larger; the infiltrated plaques are button-sized to palm-sized, or larger, sometimes extending over the greater portion of the chest, back, or abdomen. The color varies from a bright pink through varying shades of red and occasionally of brown or violet. The surface may be smooth or verrucous, or fissured and excoriated as the result of scratching. The pruritus is usually severe, but may be absent. The shape and career of these plaques are almost, if not quite, diagnostic. They are circular or circinate, as a rule, and as a result of an extending periphery and clearing centre they are constantly changing in both site and contour, often moving over the surface in gyrate bands or lines, or assuming half-moon, crescent, horseshoe, kidney, or other, often fantastic and grotesque, shapes. Again, they disappear and reappear without apparent cause, as do the lesions of the first stage. While in many cases these variations in site and form require several months for completion, cases not infrequently occur in which the whole aspect of the disease changes in a few days. In one of our patients the lesion assumed the form of a curious network of connecting, broad, flat-topped ridges, between which were corresponding valleys of normally colored and apparently normal integument. As a rule, the lesions on disappearing leave no trace of their previous existence, but they may

be followed by areas of more or less permanent pigmentation or of vitiligo. More rarely, circumscribed areas destitute of pigment and resembling leucodermatous patches, may occur in the skin where no preceding lesion has been observed. The symptoms of this period often occur with, or may be replaced by, those of the preceding stage. The two periods together may last many years (fourteen in one case) before the appearance of tumors, though in exceptional instances they may be preceded by tumor-formation.

In the so-called third, or FUNGOID, STAGE (MYCOFUNGOID, NEOPLASTIC PERIOD), which, in some instances is the first and only stage, the characteristic TUMORS of the disease appear upon the face, scalp, chest, and other portions of the body. They are bean- to orange-sized,

FIG. 84.



Mycosis fungoides.

or larger; whitish, pinkish, pale, or dull reddish in hue, sessile or pedunculated, well rounded or lobulated and distinctly circumscribed. When developing from the plaques above described they may be quite flat. They may develop from any of the previously described lesions or from the sound skin. They occur upon all parts of the body, upon the palmar and plantar surfaces, the arms, the forearm, the thighs, the legs, the face, and the back. Often they are in various degrees pigmented, showing purplish, brownish, or even black colors. They are usually painful, and may or may not be tender. When the tumors have attained maturity, and before involution has begun, their appearance, especially upon the face, is characteristic. Here they are smooth, moderately firm, globular, often lobulated, or sausage shaped, of a peculiar reddish hue, and when numerous produce a lepra-like deformity, closing the eyes in consequence of their size or weight, producing the

leonine brow and the elephantiasic ear. In a case reported by one of us,¹ and illustrated in Fig. 84, the body of the patient was extensively covered with tumors of all sizes resembling those seen on the face.

Like the other lesions of this disorder, the tumors may disappear spontaneously, while others appear; or they may all disappear to return after uncertain intervals without known cause. As a rule, they leave no trace of their previous existence, though they may be followed by pigmentation or slight atrophy of the skin. Sooner or later some of the tumors degenerate, and lead to superficial ulceration, usually followed by papillary excrescences and mushroom-like growths of varying sizes from which the disease obtains its name. At times they may be the seat of much more destructive ulceration, though with but few exceptions this destruction is limited to the new-growth, and even large fungoid and apparently deeply ulcerated tumors may completely disappear and leave no trace further than pigmentation and possibly a small atrophic scar.

The general condition of the patient at first seems unaltered; later, when the tumors ulcerate, exhaustion occurs and the victim usually dies as a result of febrile processes, of intercurrent disorders, of leucocythæmia, of cachexia, or of pyæmia. When the tumors are many and ulceration extensive the appearance of the patient is repulsive in the extreme; the exhalations from the body are in the highest degree fetid, and the difficulty of procuring asepsis, hygienic care, and comfort for the wretched sufferer is well-nigh insurmountable. Extirpation of the tumors is usually followed by recurrence, frequently with added malignancy.

The superficial and deep lymphatic glands may enlarge, and this adenopathy, as in the case of the tumors, may subside to be replaced later by similar involvement of the same or other glands. Other complications of the disease are: pleuropneumonia, pulmonary tuberculosis, hemiplegia, nephritis, and erysipelas.

The duration of the tumor-stage is brief compared with the others; frequently death occurs within a few months, though it may be postponed two or three years.

Etiology.—The disease is more frequent in men than in women, often in those of unusual weight and size, and usually occurs between the thirtieth and fiftieth year of life, oftenest after the fortieth year, though in a few instances it began earlier, even in childhood. Though the cause of the disease is not definitely known, there can be little question to-day as to its infectious character. It is probably produced by specific micro-organisms, but direct evidence of contagion and successful culture- and inoculation-experiments are wanting.

Pathology.—The disease has been studied by many observers, including ourselves. While the reports of different investigators at first reading apparently vary widely, closer study of the recorded observations indicates that on the main points they agree. The early lesions show on histological examination dilatation of the vessels with often some endothelial proliferation, and a more or less dense cell-infiltration that is usually limited to the upper part of the corium, except

¹ *Edinburgh Med. Jour.*, 1883-1884, page 592.

where it surrounds some of the deeper vessels in the forms of sheaths or "cuffs." Galloway and McLeod¹ describe in the early stages a connective-tissue cell-infiltration not only about the vessels, but also about the hair-follicles, the sebaceous glands, the muscles of the hair-pouch, the ducts of the coil-glands, and occasionally along the lymphatic spaces between the connective-tissue fibres. They conclude that the characteristic infiltration may originate in the cells of any of these structures. The infiltration in some instances is diffuse, but sharply separated from the deeper parts of the corium by a horizontal line, and from the rete above by a narrow layer of connective tissue. In other instances the infiltration occurs in round or irregular areas, separated by bundles of normal connective tissue. Where the cells are most compact they are supported by a very delicate fibrous structure made up in part of elastic fibres. Degeneration of collagenous and elastic fibres occurs in the late, but not in the early, stages of the disease. The cells forming the infiltration are in the main of the connective-tissue type, but in many cases they and their nuclei show the greatest diversity in size, shape, and staining qualities. Round, cuboidal, or irregularly shaped cells with little protoplasm and a deeply staining nucleus are numerous. Many of the irregular bodies are apparently fragments of cells. In many places the cells are so closely packed as to modify their shape and size. This multiformity of the cells is apparently characteristic of the disease, and Unna believes that it is due to the result of two antagonistic processes constantly going on, that is, cell-multiplication and cell-destruction, and that many of these odd forms are nothing more or less than cell-fragments. Mast-cells, multinuclear cells, and giant-cells are seen in some lesions, but are absent in others. Mitotic figures are frequent. The papillæ are enlarged, in places packed with cells, in others more or less œdematous, as also are portions of the subpapillary layer. The rete is everywhere hypertrophied, the interpapillary processes being elongated, broadened, and frequently branched. In places the cells are swollen and œdematous, with spaces between them. Mitotic figures here also are numerous, especially in the basal layers.

As the lesions progress toward the tumor-stage the cells in the corium become more regular in form and size, and the rete becomes much thinner. In the fully developed tumors the rete is usually reduced to a few, sometimes but one, layers of cells, but in a few instances it dips down deeply into the growth in a way to suggest epithelioma were it not that these epithelial processes are very slender. Many of the tumors correspond closely in structure to sarcoma, others show the histological formation of granulomata.

Numerous micro-organisms have been seen in the tissues, and some have been cultivated, but none has yet been demonstrated to have any pathogenic relation to the disease. Among them may be named streptococci in the capillaries of granulation-nodules, and staphylococci in cultures from blood. Other examinations of blood, of infected tissue, and of tumors were wholly negative as to the discovery of cocci.

It is alleged that mycosis fungoides is a form of sarcoma. The facts, however, that fully developed tumors disappear spontaneously, and that

¹ Brit. Jour. of Derm., May and June, 1900.

in but few instances has involvement of viscera been reported in mycosis fungoides, should, without other minor differences, be sufficient to exclude the disease from the sarcoma group. In a few cases of mycosis fungoides changes in the deeper organs have been found similar to those which occur in leukæmia and pseudoleukæmia, but no definite relations have been recognized between these conditions and the disease under consideration. There is a growing tendency among observers to class mycosis fungoides with the infectious granulomata.

Diagnosis.—The age, weight, and often the protuberant abdomen of the patient are usually to be considered. In the early erythematous stages the disease is to be distinguished especially from eczema, psoriasis, urticaria, erythema multiforme, and dermatitis exfoliativa. While a positive diagnosis cannot always be made at this time, in the majority of cases a careful consideration of the typical features just described will leave little doubt as to the nature of the disease. The circinate contour of the lesions, their spontaneous disappearance and reappearance, and the rebelliousness to treatment of what appears to be a mild and superficial inflammatory process, are features not found to the same extent in any of the other dermatoses named above. Aside from the absence of these three marked characteristics in psoriasis there is much more thickening of the plaques and there are characteristic scales, while the situation, history, and other features of the lesions are usually sufficient for a diagnosis; in moist forms of eczema the discharge and multiformity of lesions are both greater than in mycosis fungoides.

When these early lesions of mycosis fungoides appear in irregular patches the diagnosis from eczema can be made only after they have been under observation for weeks or months. In those exceptional cases which begin as a generalized exfoliative dermatitis an early diagnosis is not possible.

After the appearance of infiltrated plaques, or of well-developed tumors in case the other stages are absent, the diagnosis is usually clear. The infiltrated areas, nodules, and smaller tumors may at times closely simulate leprosy; but the history, the absence of areas of anæsthesia and other characteristics of leprosy, and the histological examination should clear up the diagnosis without difficulty. The tumors are distinguished from those of sarcoma by their history and career, and by their final formation of characteristic fungoid, superficially ulcerating masses.

The **Treatment** is unsatisfactory.

The pruritus and complicating dermatoses which may be present in the early stages may be treated locally with various soothing, protecting, and antipruritic applications (see treatment of eczema) according to the indications in each case presented.

The comfort of the patient is to be secured by all measures, including anodynes in an advanced stage of the disease, and his strength should be supported by a generous diet and tonic regimen. Arsenic in full doses and by hypodermatic injection has been of apparent service; Koebner reported one patient cured by this treatment. Locally ichthyol, bismuth oleate, and many other preparations have been of

service in allaying the symptoms and retarding the progress of the disease. When the affection is generalized tepid baths are productive of great comfort; the use of boric acid, resorcin, aristol, carbolic acid, or some similar agent is indicated by the fetor arising from the person. The ulcerating masses may be protected by a wet antiseptic dressing, or, after cleansing, dusted with the zinc stearate compounds, iodoform, aristol, or other powder, and protected by a proper dressing. Extirpation of the tumors is proper when such a course will add to the comfort of the patient.

The **Prognosis** is unfavorable. The patient may survive from a few months to a maximum of fifteen years, the average being from two to four years. After the development of tumors the patient may live but a few months or at most two or three years. Three cases of recovery are on record, one patient apparently relieved after an attack of erysipelas.

SARCOMA CUTIS.

(Gr. σάργξ, flesh.)

Sarcoma of the skin is characterized by the occurrence, either as primary or as secondary developments, of single or multiple, pea- to egg-sized and larger, pigmented and non-pigmented, cutaneous and subcutaneous neoplasms having a marked inaptitude for ulceration but malignant in character, recurring after extirpation, and usually terminating fatally with involvement of the viscera.

The term *sarcoma*, meaning a fleshy tumor, was originally employed by Virchow in the designation of this disease.

Symptoms.—Cutaneous sarcoma is an uncommon affection, and its clinical forms are not always clearly defined. In general they may be divided into two groups, though transition-forms exist.

(A) **Melanotic Sarcoma, or Melano-sarcoma.**—This is the more common form. It may develop from a pigmentary nævus that has been irritated, or from any pigmented point upon the integument, especially upon the dorsum of the hands and feet, the lower extremities, the genital region, and the face—over the cheek or near the orbit, where it may originate from the choroid coat of the eye. In a few instances metastatic, sarcomatous deposits on the face have been preceded by a diffuse bluish pigmentation.

Melanotic sarcoma may be of primary occurrence or may develop as a secondary deposit. The lesions are bean- to egg-sized, usually single or multiple, very firm or doughy, sessile or pedunculated, spheroid or lobulated; and varying in color from grayish brown to inky blackness. The epidermis may be discolored, thinned, and intact, or be ulcerated. The nodules are often surrounded by blackish puncta which eventually develop into tubercles. The lesion or lesions may for a long time remain stationary, or they may rapidly be followed by generalization, as a result of local irritation, either by extension from a central point to adjacent tissue, or by transmission through the lymphatics to a distance from the primary nodule.

In a case lately observed the left lower extremity of a middle-aged woman was studded with split-pea-sized to marble-sized, ink-black

masses from the ankle to the middle of the thigh. The larger were always centres of groups of similar pinhead-sized black nodules. The skin of the region affected was swollen, inextensible, inelastic, and as firm as sole-leather. The disease had extended from the ankle upward in the course of a few months.

Melanotic sarcoma is one of the most malignant and rapidly fatal of all neoplasms. Therapy is unavailing; and the prognosis is grave indeed, a fatal result usually occurring with rapidity after the occurrence of generalization, and commonly with visceral complications by reason of secondary deposits.

Recent studies of Unna, Gilchrist,¹ and others indicate that malignant growths arising from pigmented moles are usually (if not always) carcinomatous rather than sarcomatous.

MELANOTIC WHITLOW (Hutchinson) is described as a chronic onychia, displaying pigmented spots, suggesting silver-nitrate stains at the edge of the nail-fold, where eventually a fungus tumor forms with increase of pigment until the nail is exfoliated, and the process becomes generalized.

(B) Primary Non-melanotic Sarcoma.—This occurs in both localized and generalized forms.

The localized variety of primary non-melanotic sarcoma is rare, and is seen chiefly in women. As in other sarcomata, it is often first recognized at a point where a nævus or other warty growth has become irritated, usually on the extremities. At such a point there forms a firm, dull-whitish nodule, having nearly the hue of the normal skin, rarely vascularized, that may, after persistence without change for a variable period, break down by ulceration and become the seat of a fungous vegetation. Generalization of the process may result either spontaneously or from accidental complications.

The disease, when affecting the skin in multiple lesions, is characterized by the appearance of several, usually at first isolated, pea- to nut-sized and larger, smooth, spherical, irregular, or lobulated cutaneous or subcutaneous tumors. They may or may not at first be attached to the epidermis above and to the deeper structure beneath, but they eventually contract such adhesions. Between them the skin may not be involved. In uncomplicated cases at this period the conspicuous features of these lesions are: (a) their whitish color, due to envelopment in an unaltered epidermis; (b) the history of a relatively rapid development, as distinguished from fibromata, epitheliomata, gummata, and lupous tubercles, (c) the speedily declared systemic results of the growth.

Later, the skin between the lesions becomes swollen, infiltrated, painful; and, even before the tubercles desquamate, enormous tumefaction and redness of an erysipelatous type may affect the internodular tissue. In this way an entire limb, only one portion of which is the seat of tubercular growth, may attain an elephantiasic size, ulcerate at one or more points, and pour out an offensive secretion as a consequence of ulceration of the inflamed integument.

The disease is both rapid in course and malignant in type. In a

¹ Jour. Cutan. and Gen.-Urin. Dis., March, 1899.

few weeks or months the nodules or tumors of sarcoma coalesce, degenerate by ulceration, and participate in the process going on in the inflamed and excoriated skin where they are implanted. Death results either from exhaustion, intercurrent fever, or sarcomatous involvement of one or of several viscera. By the same process the skin-lesions may be the product of metastasis from the lymphatic glands or the viscera.

The disease occurs in this form over the chest, the extremities, and the genitalia, though all parts of the skin have been invaded.

IDIOPATHIC MULTIPLE PIGMENT-SARCOMA (of Kaposi and others) owes its coloring to cutaneous hemorrhages and not to a pigment-deposit. It occurs chiefly in male subjects (from forty to sixty years of age) who have been laborers, whose hands and feet become the seat of an œdema, accompanied by pruritus and other subjective sensations. Later, brownish, bluish-red, or dark-purplish spots appear, out of which develop pinhead- to pea-sized nodules, gradually increasing in volume, discrete, tender, and often grouped. They may be the seat of lancinating and radiating pains. As they multiply a lardaceous infiltration progressively involves the depth of the integument, until an elephantiasic condition is produced, a hand, a foot, or an entire limb becoming of cartilaginous hardness, bluish in tint, and covered with a smooth, mammillated, squamous, or rugous envelope, which may be also the site of tumors of considerable size. These tumors are fewer in number and smaller in volume as they spread from the distal to the proximal parts of the limb. They may be sessile, pedunculated, and grouped, but they are always of a deep-bluish or violaceous tint.

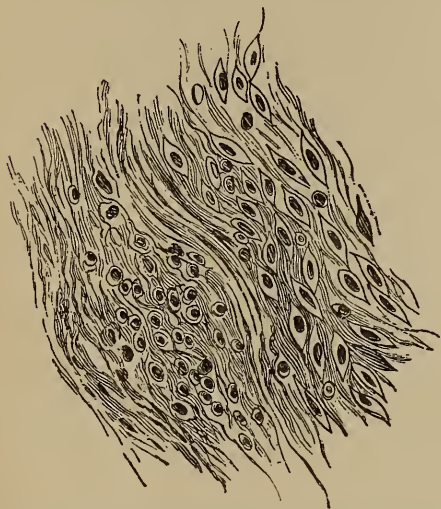
These growths may remain for a long time stationary; or they may be entirely resolved, the patient apparently securing complete recovery. Very rarely they ulcerate or exhibit slight erosions. At times they are covered with or surrounded by telangiectases, or by tissue exhibiting infiltration of blood. When the mucous membranes are involved, points, patches, disks, or infiltrations of a dusky-reddish or a bluish shade appear on the inner side of the gums, the lips, the tonsils, or over the palate; and there is visceral involvement with lymphatic and vascular changes. The usual signs of physical exhaustion ensue, with fever, dysenteric symptoms, hæmoptysis, and marasmus. The disease may last only from three to five years, but a duration of fourteen years has been recorded. Post mortem tumors have usually been recognized in the viscera. Only a few infantile cases have been recorded.

Remarkable instances of complete recovery from this affection are multiplying. A patient with the hands completely relieved was shown at the International Dermatological Congress in London, in the year 1896, Kaposi having verified the diagnosis. A patient rapidly recovering from the same disorder is under our observation. It is doubtful if this condition be a true sarcoma—in the sense in which this term is generally accepted.

RECURRENT FIBROID OF THE SKIN (Hutchinson), beginning usually in the lower extremities, and tending to slow extension, to rapid and persistent recurrence, and to ulceration and formation of fungous tumors, with ultimate marasmus, is set down by Crocker as a rare form of spindle-cell sarcoma.

Multiple cutaneous and subcutaneous tumors are reported in leukaemia and pseudoleukaemia. Some of these are apparently sarcomatous in nature while others evidently should be classed with mycosis fungoides.

FIG. 85.



Sarcoma: spindle-cells visible in sections of cutaneous nodule removed from a sarcomatous patient. (About $\times 300$.)

The **Etiology** of sarcoma is unknown. According to Babes, sarcomata are frequently congenital, and are not rarely found in early youth upon the eyelids, the extremities, and the genitalia.

Pathology.—Sarcoma of the skin may be primary, but is probably more often secondary to the disease in deeper organs of the body. Histologically, it is a connective-tissue growth, made up largely of round- or spindle-cells, and corresponds closely to the structure of sarcoma in other parts of the body, the spindle-cell being somewhat more frequent than the round-cell

type. Other mixed types, as fibro-sarcoma, angio-sarcoma, or lympho-sarcoma, are seen occasionally. The most common type recorded is the melanotic sarcoma which has been described as developing from pigmented moles or warts. Recent investigations prove that some, probably the majority, of these growths should be classed with carcinoma.

In the so-called "idiopathic multiple pigment-sarcoma" of Kaposi the pigmentation is due entirely to hemorrhage and the blood-sludging which follows. The growth is highly vascular, containing many newly formed vessels, the walls of which are very thin and often are made up of the cells of the tumor.

Fordyce¹ describes several cases of localized angio-sarcoma of the skin in which the single tumor was identical histologically with the generalized sarcoma of Kaposi.

The **Diagnosis** rests upon the history, symptoms, and microscopical examination of the new-growth. Sarcoma should not be confounded with fibroma, epithelioma, gumma, or lupous nodules.

Treatment is unsatisfactory. Surgical ablation of these tumors is apt to be followed by their speedy return.

Koebner's injections of arsenic (usually Fowler's solution, 2 to 4 drops in 1 to 2 parts of distilled water, repeated every second day for months, with gradual increase of the dose) seem to have proved successful in two cases.² Wende³ reports a case improving under this treatment. Arsenic, potash, and ergot, internally, and salol, camphorated naphthol, aristol, and bismuth subnitrate, locally, have secured only transitory benefit. Successful results, but also several deaths, are reported from

¹ Amer. Jour. Med. Sci., Aug., 1900.

² Berlin. klin. Woch., 1883, No. 2.

³ Jour. Cutan. and Gen.-Urin. Dis., 1898, p. 205.

inoculation with cultures of the streptococcus of erysipelas. Favorable results have been reported in a few instances by Coley and others from the injection of the combined toxins of this streptococcus and of the bacillus prodigiosus. In the majority of cases these measures are unsuccessful.

The **Prognosis** is unfavorable, a fatal issue occurring in most cases.

CARCINOMA.

(Gr. *καρκίνος*, cancer.)

The term *cancer* has been employed both loosely and definitely in the designation of malignant cutaneous tumors. Every cancer of the skin is, according to some authors, necessarily both alveolar and epitheliomatous in structure; while others distinctly recognize forms of cancer which are not epithelial. In these pages, for the sake of retaining a convenient clinical distinction, the term carcinoma, or cancer, is limited to malignant growths of epithelial origin.

EPITHELIOMA.

(EPITHELIAL CANCER, CARCINOMA EPITHELIALE, RODENT ULCER.
Ger., EPITHELIALKREBS; *Fr.*, CANCROÏDE.)

Symptoms.—Three clinical varieties of epithelioma are recognized—the superficial, the deep, and the papillary. They are practically no more than varying phases of a single pathological process.

Superficial, or Discoid, Epithelioma is usually first displayed upon the sound skin in the form of one or of several pinhead-sized papules, flat infiltrations, disks, or nodosities of a dull-yellowish, reddish, grayish, or dirty wax-like hue. The growth may also have its origin in previously existing skin-lesions which are both numerous and different from one another. Among the latter symptoms may be named: fissures and excoriations (especially those long teased by caustic applications); warts, nævi, acneiform and molluscoid lesions; and the dry or greasy epidermal scales often seen at the orifices of sebaceous glands in the faces of the aged. The outline of the newly developed growth as a consequence varies, being roundish, linear, or irregular. As a result of accident or traumatism (especially scratching and picking, which the history of a large proportion of all cases includes) there forms a superficial excoriation, which may be covered with a sero-sanguineous crust after the desiccation of its scanty and ichorous secretion. In the progress of its development it is often noticed that new foci of disease appear in the immediate vicinity of the first, represented by subepidermic indurated nodules, or superficial “pearls” resembling milia, whitish and lustrous, with marked tendency to vascularization, exfoliation, and superficial ulceration.

RODENT ULCER (JACOB’S ULCER, ULCUS EXEDENS, NOLI-ME-TANGERE, CANCROID ULCER).—The characteristics of this form of superficial epithelioma are a roundish, fissured, or slightly angular contour, and a reddish or reddish-brown, irregular, granulating, and mammillated floor, covered with a thin, translucent, viscid serum, which, in

drying, suggests the effect of a varnish over the part. The edges of the ulcer are clean cut, indurated, everted, usually well attached, and, seen in horizontal profile, irregularly indented. The symptoms are slight at first; the lymphatic ganglia and general health being unimpaired. Its site of election is the face, particularly the eyelids, nose, temples, and lips, though the genitalia, the hands, and the feet may be affected. Of two hundred and fifty cases collated by Heurtaux, in one hundred and ninety the face was attacked.

Some English writers still describe the rodent ulcer as distinct from epithelioma, chiefly by reason of its individual peculiarities. Pathologically no distinction can be established between the two. The clinical features upon which this distinction is based are: the slow or intermittent development of rodent ulcer; its tendency to destroy, as it extends, all the tissues within reach; its failure to implicate the system by secondary deposits or metastases; its rounded and often widely everted edges, or, better, lip, often distinctly vascularized; its gouged floor exhibiting unequal levels; its slight tendency to granulation; and its feeble or negative attempts at repair. All these symptoms are those of epithelioma, if one chooses to employ that term in its large and proper sense. The rounded or oval excavation, often exceedingly clean cut, at times with a corded and whitish rim, producing, little, if any, pain, is characteristic of the rodent ulcer, yet in its extension it may exhibit all the symptoms of a deep epithelioma.

Under the title "Crateriform Ulcer," Hutchinson¹ describes a form of epithelioma distinguished chiefly by rapidity of invasion. Its onset is by the formation of a roundish or conical mass which rapidly exhibits ulceration, a central crater forming with exceedingly dense walls.

The subsequent course of the lesion varies, its evolution being generally slow and accomplished in years. Sometimes having attained a maximum of size, the ulcer, if unmolested, long persists without appreciable change. In other cases the base cicatrizes and the epithelioma completely exfoliates, leaving an outlying linear ulceration which may persist or spread. In yet other cases, after a persistence of from ten to twenty years, the ulcer may spontaneously close and the disease be at an end. Sometimes the ulceration is very superficial and slowly spreads in circles, segments of circles, or in irregular gyrate outlines, the older portions healing and cicatrizing while the border advances. Such lesions may cover considerable areas of the body and closely resemble the serpiginous lesions of syphilis and lupus. In many cases the papillomatous element is marked. To this form of superficial discoid epithelioma the name PAGET'S DISEASE is sometimes applied, as the process is practically the same as that which attacks the nipple and breast. Finally, any one of the destructive and malignant cancerous processes may be awakened, and the epithelioma be thus transformed from the type of the superficial to that of the deep variety of the disease.

Deep, or Tubercular, Epithelioma.—This variety may originate in the manner already described, or may be from the first characterized by

¹ Transactions of the London Pathological Society, 1889, p. 275.

its specific features. It commonly begins by the formation of roundish, very firm, pea-sized nodosities closely set in the skin and subcutaneous connective tissue, or be thus situated and well projected from the surface. In the course of months and years these nodules develop to form a nut- or even a small egg-sized tumor, roundish, dark reddish in color, and delicately vascular on its surface. This tumor may be a deep flattish or globoid development within the skin; or be a well-defined nodule attached to it; or (and this is a common form) be a dense, thick, flattened plaque, a centimetre or more in diameter, its walls steeply descending to the sound skin on either hand or moderately everted; its centre depressed by atrophic changes; its surface shining, waxy, pinkish, or red, with ramifying capillaries. "Satellites" may form in its vicinity.

Degeneration of these forms produces in the course of time an ulcer either like that described above, or one which deeply and destructively encroaches upon the tissues beneath. In advanced cases the latter ulcer is irregular in contour, with a clean-cut, everted, indurated lip; eroded and "gouged," hemorrhagic and granulating floor; thin, viscid secretion which is foul and purulent at times when the resulting destruction is rapidly accomplished; and a deep attached base which may be perforated by a crateriform exulceration extending down to or through muscles, fasciæ, cartilage, and bone. The lymphatic ganglia become simultaneously involved, and a general cachectic condition is established. Death may ensue from marasmus, exhaustion, or hemorrhage in the course of several months or from one to three years.

Papillary Epithelioma.—The cancer in this variety assumes the form of a malignant papilloma. In these cases a pedunculated or sessile, narrow or broad-based, smooth-capped, or spongy and verrucous vegetation is attached to the skin upon which it forms. It may originally be as small as a pea, but usually it increases considerably in volume, being not rarely pigeon's-egg- and turkey's-egg-sized. The surface is either dry, reddish yellow, smooth, and lustrous; exfoliating, and secreting an offensively smelling sanguineous or translucent fluid; or is moist, granulating, filamentous, and intermingled with hairs, as when it occurs upon the bearded cheek. Degeneration occurs later, fissures forming first; subsequently there appear superficial, and finally deep, ulcers which ultimately assume all the features of the epithelioma described above.

In some cases the epithelioma forms a soft, hemispherical, small nut- to egg-sized tumor, which upon pressure discharges numerous convoluted plugs, composed of epithelium, fatty masses, and a purulent secretion. The bases of these soft masses are remarkable for the ease with which they can be curetted and thus radically removed.

A careful study of well-marked cases of papillary epithelioma indicates clearly that while ulceration often results, the centre of the mass breaking down and furnishing a typical cancerous excavation, with hard and rounded or oval border, uneven base, irregular granulating floor, and offensive discharge, the picture may be wholly different. Occasionally the superficial process extends widely over the brows, cheeks, and chin, interspersed with raised cicatriform areas, suggesting

that ineffectual attempts had been made to check the disease by surgical measures. These apparently atrophic disks, mingled with vascular, florid, fungiform, pyriform, and oddly shaped outgrowths, are really cancerous infiltrations of the type of discoid epithelioma. They may be seen gluing the lobe of the ear to the cheek, or everting the lower lid, even when superficial papillary vegetations are the predominant features of the disease.

Epithelioma of the skin occurs also with multiform features, almost as numerous as the several different lesions from which a cutaneous cancer may take its origin.¹ Thus, a wart, a "button," a vegetation, a crack, an erosion, may result in a fissure that bleeds easily and refuses to heal. After months or years there forms an epithelioma, assignable to one of the clinical varieties described above. In other cases there may be a number of greasy scales upon the skin-surface resembling those seen in well-marked *seborrhœa sicca*; and in one or two spots the removal of these scales offers to the eye a superficial erosion implicating the derma, bleeding freely, and, when undisturbed, crusting and slowly spreading under the crust rather than healing. In yet other cases a thin pellicle of apparently loosened epithelium, looking like a papery crust, is found, when removed, to cover three or more shallow ulcers, unexpected and hidden from view by the tenacious pellicle which had protected them and beneath which they had indolently and painlessly developed.

These varieties or types of epithelioma may coexist in different portions of the same integument, or the one may develop from the other, a malignant papillary growth springing from a superficial or a deep cancerous infiltration. Familiar examples of the disease are seen upon the eyelids and contiguous portions of the nose; the cheek and the lower eyelid, the latter being often drawn into ectropion by a cicatrical form bridle or band; the nose or lip and adjacent mucous or osseous tissue; and the glans and prepuce where the vegetating forms are of more frequent occurrence. The vast destruction wrought by the widest development and consequent degeneration of epithelioma is sufficiently recorded in the annals of both medicine and surgery. A woman sixty-four years of age was exhibited at the clinic, in the centre of whose face an ulcerating epithelioma had left a wide chasm, after destroying three-fourths of the nose and upper lip, and the hard palate with all the upper teeth and the antrum. The bones at the base of the skull were exposed. This case illustrated well the occasional remarkable tolerance by the system of the profoundest encroachments of epithelioma. She was then digesting and assimilating food with fair profit, and suffered chiefly from pain. She did not die until several months had elapsed, and then only as the result of hemorrhage from an ulcerative opening into one of the large arteries.

CANCER OF THE HEAD.—In this region of the body nearly three-fourths of all cancers of the skin are recognized. Upon the brow, the alæ of the nose, the temples, cheeks, chin, scalp, or other part, the

¹ Cf. Fordyce: "Clinical and Pathological Observations on some Early Forms of Epithelioma of the Skin," N. Y. Med. Jour., June 9 and 23, 1900.

disease may begin either upon or beneath entirely normal skin, or in that which has pathologically been changed. The origin of the disease is usually ascribed to the picking, scratching, or shaving over a sebaceous wart in an old man; or in similar traumatisms of acneiform, seborrhœic, or furuncular lesions in either sex. In other cases the dermatologist, consulted with reference to some other ailment of the skin, can recognize, in persons of the age most liable to such accidents, one or several pinhead-sized or larger milium-like nodules, clustered about the temples or the nose, that indicate the site of the awakened epitheliomatous change. The disease progresses slowly, spreading superficially along the alæ of the nose in irregular lines, in more complete centrifugal outline over the temple and brow; almost symmetrically over the tip of the nose, and with odd indentations of contour in the dense integument immediately in front of the tragus of the ear. The vegetating forms are more common on the brow, scalp, and chin; the "rodent-ulcer" type, over the temples and cheeks. The more superficial varieties in any part of the face may slowly be converted into the deeper. The flattened, egg-sized disks of infiltration are more common on the cheeks and chin.

The devastation produced by malignant cancer is nowhere more conspicuous than in the face. Cartilage, bone, muscle, and entire organs melt before its ravages with astounding readiness. Within a period of two years a circumscribed flat epitheliomatous infiltration, limited for many months to one cheek, may spread to the point of destroying the ear, eye, and inferior maxilla of one side of the face, opening into the larynx and œsophagus, and not producing a fatal result until the jugular vein of the same side is opened by ulceration.

CANCER OF THE LOWER LIP, far more common in men than in women on account of the tobacco-habits of the former, may arise either as a minute lobule or as a circumscribed thickening on or near the vermilion border, usually of one side, or as a linear, narrow, and shallow excoriation, often protected by a thin crust, extending well along the mucous edge of the lower lip that is in contact with the upper when the two are lightly approximated. Later, the lip may be the seat of a defined tumor, small nut- to egg-sized, that may deeply involve the entire thickness of the lip, encroach upon the chin, loosen the teeth, destroy the gums, larynx, pharynx, tongue, and maxilla, and eventually produce one of the formidable and remediless chasms of the lower part of the face already described.

CANCER OF THE GENITAL ORGANS is submitted to the surgeon more frequently than to the dermatologist. The glans penis, the clitoris, and the prepuce are occasionally the seat of a warty variety; but the scrotum, labia, thighs, mons veneris, and abdominal walls, as well as the parts first named, may be involved in the superficial or the deep form of cancer. In persons of cleanly habits the superficial variety of epithelioma may persist in the genital region as indolent and innocuous as upon the face; but where filth is permitted to accumulate about the part (lochial, menstrual, catarrhal secretions; pus, urine, feces, etc.) the spread may relatively be rapid. The ulcer is then deep, seated upon an indurated and very tender base, and has the steep,

punched edge and hemorrhagic floor of the rodent ulcer. Ulceration may, later, open the rectum, vagina, corpora cavernosa, perineum, and deep perineal fascia, resulting in vast destruction that proves fatal by exhaustion of the forces of the aged patient.

CANCER OF THE EXTREMITIES, particularly of the back of the hand, is at first usually papillomatous, or of the flat, superficial form. It may appear upon the left hand of right-handed patients. Its progress is indolent, and when properly treated is much less liable to grave ulceration than epitheliomata in other situations. In special regions, especially on the lower extremity, where the force of gravity generally aggravates any ulcerative process, there may result caries, necrosis, fistules, loss of phalanges, etc.

CANCER OF THE MUCOUS SURFACES may be primary or be secondary in origin. The mucous lining of the oral and nasal cavities, of the vagina, the rectum, and the balano-preputial sac may thus be involved, either by extension of the disease from the neighboring cutaneous surface or by primary involvement of the mucous tissue. The most important, by reason of statistical frequency, is cancer of the tongue and buccal membrane, often having its origin in the leucoplastic striations, plaques, or thickenings, known as "smokers' patches," ichthyosis linguæ, psoriasis linguæ, etc. A pinhead- to pea- or bean-sized superficial excoriation is usually the first lesion to which attention is attracted, reddish in color, granulating, tender, and not often very painful; or the beginning is a shallow fissure at the edge or on the tip of the tongue or on the mucous face of the lower lip, its long axis commonly at right angles to that of the organ upon which it forms. Beneath with more or less rapidity (as a rule slowly) dense induration occurs, lancinating pains dart from the affected region toward the ear or along the jaw, the submaxillary and other glands become tumid and tender, deglutition painful and in severe cases well-nigh impossible; or from the nasal membrane the disease extends toward the palate, pharynx, or larynx, ulceration, when it occurs, opening up a vast chasm which represents all these cavities. In the vagina and the rectum a cancerous change may begin with merely a thickening of the surface of the mucous membrane leading in the course of time to a superficial and later to a deep ulcerative process; or, as in cutaneous epithelioma, the papillary form may be represented in vegetations, cauliflower-shaped, filiform, or simply warty and mammillated, that eventually degenerate and furnish the most formidable of destructive results.

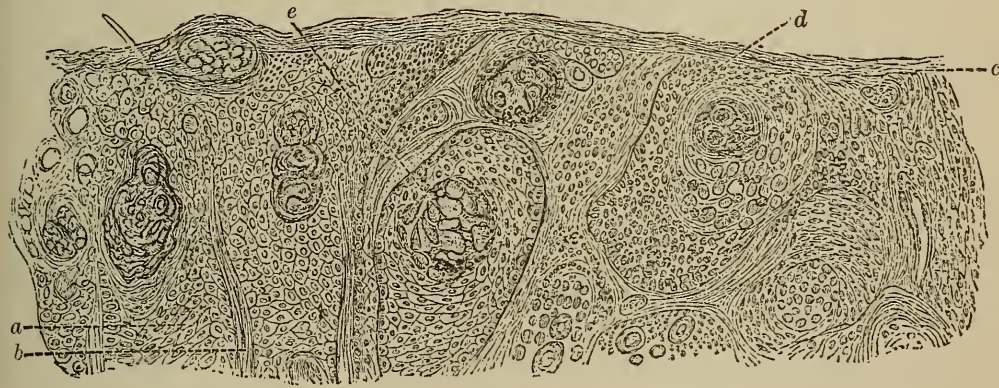
Etiology of Epithelioma.—The essential causes of cancer are unknown, though there can be no question that mechanical, chemical, and other local irritations are often immediate excitants of its pathological processes in the predisposed skin. In this way the excoriations, warts, nævi, and other lesions named above, though not in themselves cancerous, may become the original sites of the disease. In this way, too, the irritation produced upon the lips of the smoker by his pipe or tobacco; the local disorder about the inner canthus of the eye resulting from occlusion of the lachrymal ducts; the frequent teasing by caustic or other substances of the wart on an old man's hand; and other agencies disturbing the balance between waste and repair, aided

at times by senile atrophic changes, may result in the development of an epithelioma. The possibility of the transmission of cancer by heredity has almost ceased to obtain credence in the light of modern pathology, yet Broca reports sixteen deaths from cancer in one family, and Friederich a congenital epithelioma in the child of a cancerous woman.

The disease is eminently one of advanced life, being most frequent after the fortieth year, and a pathological curiosity in childhood. Kaposi reports one case at the tenth year. Only about 30 per cent. of all cutaneous cases occur in women, a fact possibly explained by the relative infrequency of the action of local irritants in those who are not subjected to the exposures incidental to the trades and laborious occupations of life. These figures, however, relate only to cancer of the skin, since, when cases of cancer of the breast and of the uterus are included, the proportion of the sexes affected is almost exactly reversed.

In favor of the local origin of cutaneous epithelioma is the clinical fact of the excellent general health of most patients in the earliest stages of the malady; while those affected with syphilis and tuberculosis are usually exempt. The theory that carcinoma is due to a specific parasite and is, therefore, infectious and contagious, is gaining ground. No parasite has yet been demonstrated, since the protozoa-like bodies which Darier and others described in cancer-cells have been demonstrated to be forms of cell-degeneration.

FIG. 86.



Epithelioma (vertical section): *a, d*, cones of the rete projecting downward, between these are seen atrophied papillæ (*b*); at *e, d*, and other points are "nests" of epithelium; *c*, atrophied stratum corneum. (After KAPOSI.)

Pathology.—All epitheliomata have their origin in preëxisting epithelium. The old idea that they originated from connective tissue has been disproved. The essential feature of all forms of epithelioma is proliferation of epithelium and its growth into the deeper tissues, where it is not normally found and where its presence causes secondary inflammatory changes. Two pathological types of epithelioma are of interest to the dermatologist, the lobulated and the tubular.

In the LOBULATED form the interpapillary processes of the rete send down prolongations which subdivide and branch in all directions, the branches intercommunicating and giving off buds and processes which

may form new centres of growth. The origin of the growth may be traced to the interpapillary processes or to the epithelium of the sebaceous glands, coil-glands, or hair-follicles; but more frequently the source cannot be determined absolutely, since the band connecting the growth with its starting-point may have been destroyed by ulceration. On the other hand, the glands and follicles may be involved secondarily. Attempts have been made to classify epitheliomata according to the structure from which each originates, but there seems to be no good ground either clinical or pathological for such distinction. The branching processes form variously shaped lobules, and the cells composing them assume, as the result of pressure, many shapes. Usually, however, the outer layer of a lobule is a row of cylindrical cells within which are cuboidal prickle-cells, which toward the centre are undergoing cornification, the centre itself being composed of horny stratified cells. Thus, the structure of a lobule from without inward corresponds closely with that of the normal epidermis from within outward. Sometimes the prickle-cells within the lobules show no tendency to cornification. In places the lobules are compressed into globular masses having concentric layers like an onion. These bodies are the epithelial "nests," "globes," or "pearls." The centre of such nests not infrequently shows colloid, fatty, or granular changes. In rare instances calcification of the lobule occurs.

The connective tissue of the part into which the growth has penetrated surrounds and supports the lobules, and may remain almost normal, or be thickened and infiltrated with round cells, or its fibres may be mixed with epithelial cells; it contains blood-vessels, none of which penetrates the lobules. In some cases the epithelial growth proves greatly irritating to the surrounding tissues, exciting in them marked inflammatory processes. Fordyce believes the inflammation may be due in part to a pus-infection, and in one case, by using Gram's method, he demonstrated staphylococci in the inflamed tissue.

In the TUBULAR variety of epithelioma the epithelial elements form freely anastomosing, cylindrical processes which extend vertically, horizontally, and at various angles through the cutis and often into the subcutaneous tissue. The cells are smaller than in the lobular variety and do not, as a rule, undergo cornification or form "nests." The outer row of cells may be cylindrical and stain deeply, and as the tubular processes may assume shapes highly suggestive of gland-formation, this variety of epithelioma is supposed by some observers always to originate in the epithelium of a coil- or sebaceous gland. Largely owing to the ease and rapidity with which the starting-point or connecting-band may be destroyed by ulceration, it is often impossible to demonstrate the origin of the processes, but the investigations of Darier, Pollitzer, Fordyce, and others have led to the belief that the growth originates rarely in the sebaceous glands, but frequently in the rete or in the epithelium of the coil-glands and hair-follicles.

Tubular epitheliomata are, as a rule, less malignant and less rapid in their course than are those of the lobular type. Transitional forms are seen, however, which tend to show that the shape and mode of development of the processes depend as much upon the accident of loca-

tion and surrounding tissue as upon the character of the epithelium from which they originate. Rodent ulcer—which some authors describe under a separate head—is pathologically a tubular epithelioma.

Diagnosis.—Epithelioma is to be distinguished from lupus vulgaris approximately by the age of the patient, the latter disease rarely appearing after the thirty-fifth year where there is no scar or a history of its earlier existence. Lupus is, at an earlier period of its career, more diffuse than epithelioma; its elementary forms are more distinctly groups of individual lesions than a homogeneous aggregation; its ulcers are more often bordered by outlying non-ulcerative papules; furnish a more puriform discharge; and, most distinctive of all, are never walled about by the firm, densely indurated, often everted lip of the epitheliomatous ulcer, opening out often to a sound peripheral integument. The peculiar and often characteristic odor of the cancer-discharge is absent in lupus.

From syphilis, epithelioma is to be distinguished: first, by the age of the patient, syphilis being decidedly a disease of early and middle life; second, by the far greater relative rapidity of the syphilitic process, exception always being made of tertiary gummatous ulcers upon the lower extremities persisting for years when there are both lack of internal treatment and of local support; third, by the history of the disease in each particular case; and, fourth, by the characteristic syphilitic features always present in infected individuals, including multiplicity of lesions, typical cicatrices, contour of ulcers (that of epithelioma is less often either reniform, horseshoe-shaped, or crescentic), character of discharge, and general absence of pain. A very important point to note is a marked tendency to reparative cicatrization in old syphilitic ulcers, partly due to exhaustion of the infective poison, partly to the influence of an insufficient but yet modifying treatment. This tendency is exceedingly rare in epithelioma, which is often, while syphilis is rarely, a malignant disease.

Epithelioma of the genitals is not to be confounded with chancre, gumma, or syphilitic tubercles of that region. The peculiarities of the consequent adenopathy in each case; the lancinating pains of cancer; its much more prolonged duration; and its occurrence in an aged subject, with the general history of the case, will usually point to the truth.

Sarcoma is characterized by its far more rapid evolution, the tumors often attaining their maximum of development in the course of a few months; by its occurrence by predilection in earlier life; by its inaptitude for ulcerative degeneration; and by its marked tendency to multiplication in contiguous or in distant portions of the body.

The warts, nævi, excoriations, and seborrhœic lesions, from which epitheliomata often take their origin, cannot be determined as having such a tendency before the cancer has attained some development. Every such persistent and long-irritated lesion on the person of a male subject of advanced years should be regarded with suspicion.

Treatment.—No internal treatment for cancer of the skin is known to exert the slightest influence upon the growth.

The topical treatment of epithelioma is by excision, erosion, or destruction of the growth. The first is performed by surgical ablation

with a bistoury, after which one of the plastic operations may be required for either complete covering of the wound or relief of the resulting deformity. The second is applicable only to the less formidable growths, and is performed with the aid of a dermal curette. The third is effected by the use of caustics. The removal of smaller epitheliomata, of the face *especially*, with the aid of a dermal curette, should generally be followed by the thorough application of the milder caustics, such as silver nitrate in crayon.

Destruction of smaller cancerous tumors of the skin may be performed with the aid of caustics, of which potassium hydroxide, in stick or in solution, is perhaps the most valuable, as its destructive action may be controlled by the topical employment of acids, and it is followed by less pain than are some of the other chemical agents. Other caustic substances employed for a similar purpose are: zinc chloride, Vienna paste, silver nitrate, arsenical paste, resorcin, fuchsin, and pyrogallol. The latter is highly recommended by Kaposi, not only because its application is unproductive of pain, but also because it does not attack sound tissue. It is used in an ointment of 10 per cent. strength. All such pastes and ointments should be spread upon cloths, and be applied for from three to six days. Opiates may be required, in the case of several of these agents, to relieve the consequent pain.

Among the formulæ used for caustic purposes are the following :

R	Creasoti,	$\bar{3}$ ss;	15	
	Acid. arsenios.,	gr. iv;		26
	Opii pulv.,	gr. ij;		13 M.
Sig. For employment upon circumscribed surfaces. [Kaposi.]				

Marsden's paste, also employed as a caustic, is made by combining equal parts of gum arabic and arsenious acid with water sufficient to make a softish paste. By Robinson¹ it is preferred to others, and is applied on rubber plaster.

Cosmé's paste, as modified by Hebra, is prepared as follows :

R	Acid. arsenios.,	gr. vj;		40
	Hydrarg. sulphuret. rub.,	$\bar{3}$ ss;	2	
	Unguent. aq. ros.,	$\bar{3}$ ss;	15	M.
Sig. Arsenical paste for external use, with caution.				

The method of its application is as follows: the paste is spread over a thin sheet of lint to the thickness of a knife-blade, and the lint is then cut to a shape and size corresponding with those of the tumor or ulcer to be destroyed. After its close apposition with the surface to be attacked the lint and paste should be covered with gutta-percha or other impermeable tissue, and a compress laid over the whole. In twenty-four hours the dressing is removed, the parts washed clean, and the same application renewed. By the third or the fourth day the destruction of the cancerous growth is usually complete, and the parts are ready for an emollient poultice, which should be applied for the

¹ "Treatment of Cutaneous Malignant Epitheliomata," Internat. Jour. of Surgery, 1892.

three or four days during which separation of the slough occurs. The simple ulcer left is to be treated on general principles. The danger of arsenical poisoning is here reduced to a minimum; the treatment being very effectual where patients consent to the delay as to time and to the severe pain which it occasions.

The thermo- and galvano-cautery may also be often advantageously used for destruction of the growths. The advantages of the thermo-cautery are: the transitory character of the induced pain; the coal-like dressing left upon the attacked surface; and the elegance of the resulting scar. Both measures find their highest value when employed after incision or erosion.

Whatever method be employed, thoroughness is essential in attacking all portions of the new-growth; and it is well to encroach somewhat upon the unaffected contiguous structure. The subsequent dressings should be made with simple or carbolated unguents, to which one of the salts of morphine may be added in case of continuous pain. The eschar usually separates in the course of a few days, leaving a simple granulating wound which may soundly cicatrize, and the epithelioma be thus radically relieved. In other cases the disease reappears in the ulcer or cicatrix, or, by recurrence of cancerous nodules, in the previously sound integument. Even after these recurrences prompt destruction of the new-growth may finally be successful.

But little confidence is placed upon any external treatment which does not effect complete destruction of the neoplasm. Yet there are those who highly esteem some of the procedures which are less radical in their aim, and which it is proper to mention here.

Levêque,¹ Vidal,² Bergeron,³ Euthyboule,⁴ and others claim large success in the treatment of epithelioma by potassium chlorate. Locally, the part is frequently touched with a saturated solution of the salt in glycerin and warm water, after which a simple ointment-dressing is applied. Vidal administers also the same drug internally in doses of $1\frac{1}{2}$ drachms (6.) in syrup and water before meals. It is possible that any remedial effect obtained from such measures should be attributed to the fomentations employed. Latterly, benzole and pyoktanin-blue have been reported as valuable topical applications to small-sized epitheliomata.

Injections of solutions containing cupric sulphate, iodine, alcohol, acetic acid, silver nitrate, sodium chloride, and hydrochloric acid have been practised, it is claimed, with some success; certainly at times with fatal results. This method is unquestionably inferior to others described above.

Prognosis.—In general, the prognosis of cutaneous cancer is grave. The relative degree of gravity largely will be proportioned to the variety, form, size, career, and complications of the growth in each case. The variety in which only “pearls” form in the skin is the most benign, as the lesions are usually isolated, and may, when unirritated, undergo spontaneous exfoliation. In other cases the disorder for from fifteen to twenty years seems to make no progress of any sort. The malignity

¹ Glasgow Med. Jour., 1881.

³ Bull. Acad. de Méd., Paris, 1873.

² Loc. cit.

⁴ Thèse de Paris, 1877.

of a cancerous growth is usually proportioned to the quantity of epithelium as compared with the connective tissue present; the more abundant the latter, the more favorable the prognosis. Naturally, also, the deeper and the more destructive the growth, the fewer are the chances of ultimate recovery. Excessive pain and adenopathy are unfavorable symptoms in any case. Koch¹ gives statistics of the results of operations, at the Erlangen Clinic, for the removal of epitheliomata of the lower lip, in one hundred and thirty-one patients exhibiting primary lesions. One hundred and fifteen of these were for the time "cured"; four had speedy relapse; and three were, at the date of writing, suffering from recurrence of the disease.

PAGET'S DISEASE.

(ECZEMATOID EPITHELIOMATOSIS OF THE NIPPLE, MALIGNANT PAPILLARY DERMATITIS, CUTANEOUS PSOROSPERMOSIS.)

This disorder was first described in 1874, by Paget,² and has since attracted the special attention of a number of English, French, and American observers, including Thin, Duhring, Malassez, Darier, Wickham, and others.

At the onset the disease suggests an eczematous involvement of the areola of the nipple, usually of one breast only, in women between forty and sixty years of age. According to Besnier and Doyon, the earliest change is without question a choking of the lacunæ of the nipple with corneous cells, and this either without the operation of any known cause or as a consequence of a localized eczema, a galactorrhœa, or other irritant. When early recognized the surface is intensely red and granulating, exuding copiously a clear viscid secretion, and producing subjective sensations of heat and burning, with intense or with moderate itching. The definition is distinct, the tissue is indurated, and the tenderness and pain are usually well marked and distressing. A conspicuous feature of the disease is the circumscribed infiltration of the skin and subcutaneous tissue, which on palpation suggests a large-sized coin or button let into the substance of the areola and surrounding parts.

When the disease has progressed to this point a cancerous infiltration of the breast is usually recognized, at least after its removal, though even with great care it may not always be possible to distinguish it before ablation of the gland. Crocker, however, holds to the belief that the disease of the nipple may endure for years without resulting retraction and development of scirrhus of the breast. The French recognize three stages, that in which the disease is limited, respectively, to the nipple, the areola, and the breast, the latter, of course, succeeding but not replacing the earlier. In all cases there is no attempt at repair; and when abandoned to its course the ultimate result, after five to eight or more years, is a profound ulceration with destructive effects most noticeable in the region of primary invasion, the entire

¹ Centralbl. f. Chir., 1881, No. 40.

² St. Bartholomew's Hospital Reports, 1874, p. 87. See also the paragraphs in this treatise devoted to this subject under the title of Eczema.

breast having become cancerous. Cases of Paget's disease affecting other parts of the body have been reported. In such cases the process is identical with that of superficial discoid epithelioma described on a preceding page.

Pathology.—Darier and Wickham, in a series of papers published during 1889 and 1890, attempted to show that this disorder was to be included in a list of morbid processes which they described under the title of "Psorospermiosis," a group of affections of parasitic origin. But later investigations have shown that the so-called "psorosperms" are in fact simple alterations of epithelium that may be recognized in other affections as well as in Paget's disease of the nipple.

In the earlier stages the histopathology is that of a chronic dermatitis. Epithelial proliferation and thickening progress, however, and in the later stages the structure is that of a discoid epithelioma.

Diagnosis.—There are few cases in which the raw and exuding surface may be mistaken for an eczema. The latter, when occurring upon the surface of the breast and of the nipple, is far more common during earlier periods of womanhood than after the fortieth year, and is seen chiefly among those giving the breast to sucklings. Eczema is never, under any circumstances, capable of producing in this region the characteristic button- or large-coin-sized induration beneath the deep-red, raw, granulating surface of the cancerous infiltration.

The **Treatment** of Paget's disease should always have in view the possibility of cancerous involvement of the gland that usually occurs, though a number of cases are on record in which relief by other than radical measures was secured. Caustics should never be employed; all irritants are to be avoided. Soothing applications, as in corresponding stages of eczema, the pastes, zinc and calamin lotions, diachylon and other soothing salves, are indicated and often prove serviceable. The employment of parasitocides meets with little favor now that the psorospermiosis theory of the disease is abandoned. Mercurial lotions followed by powders of aristol or hydronaphtol (1:100), and a weak ointment of pyrogallol or of iodoform are also extolled. Complete erasure of the morbid tissue may be successful, but ablation of the entire breast is demanded in most of the typically developed cases.

The **Prognosis** is not always grave. Cases are reported as relieved by local measures, which are always worth a judicious trial; but ineffectual measures may permit involvement of the breast eventually calling for ablation of the entire gland.

CANCER OF THE CONNECTIVE TISSUE.

This is rare as a primary cutaneous manifestation, but appears generally as secondary to a cancerous involvement of other organs, as of the female breast. It is termed also SCIRRHOUS, HARD, FIBROUS, or LENTICULAR CANCER. It occurs either upon the skin covering a breast which has previously been transformed into a cancerous mass, or as a cutaneous relapsing lesion after extirpation of the latter. Its symptoms are pea- to bean-sized, densely firm, shining nodules, varying in color; or a more or less diffuse infiltration of the skin, of similar

characteristic hardness, associated often with hyperæmia of a purplish-red shade.

Cancer en Cuirasse.—When the cancerous infiltration is widely diffused and densely indurated, involving a large portion of the integument of the thorax, the condition is termed by the French *cancer en cuirasse* (Fig. 87), a title first given by Velpeau. The malady is striking in its peculiarities, and in the highest degree serious. The integument of a large portion of the chest, usually more in front, but also behind, and even a part of the anterior abdominal wall, is converted into a dense, leathery envelope, often so compressing the chest-wall as seriously to impede respiration. The edges of the infiltration are poorly defined save at the lines where tongue-like prolongations (*languettes*) of dull-reddish hue indicate the advance of the scirrhus

FIG. 87.



Cancer en cuirasse, chiefly involving the right side of the chest.

process over the skin. The lymphatic circulation is obstructed, the glands enlarge, and, what is almost pathognomonic of the disorder, the upper extremity, especially the forearm, usually of the side chiefly involved, becomes enormously swollen and œdematous. The nipple may or may not be retracted; the breasts, one or both, are firmly bound down to the chest-wall by the cuirass of dense skin, hard, smooth or rough, shining, and either reddened in dull hues or of normal tint, here and there traversed by vessels, and breaking down into ulcerations, usually first about the nipple, but also elsewhere. The process is one of the more rapid of the scirrhus metamorphoses of the body, as a fatal result is usually reached in a few months, though years have in some cases elapsed before death resulted. One of our patients, an unmarried woman with breasts in the virgin state, perished in the course of a few months,

the cancer having originated in the skin. Miliun-like masses, as large as grains of wheat, undergoing fatty degeneration in the centre and readily expressed like comedones, are occasionally present.

We have had several cases of this disorder under observation, two being made the subject of a paper,¹ with illustrations of the clinical appearances and morbid condition of the tissue. One of the patients was a man. An instance of widely disseminated lenticular cancer of the skin (illustrated by portrait), described by Morrow,² occurred in a healthy-looking woman as a secondary phenomenon after removal of primary cancer of the breast. Whether the nodules be, as to cutaneous manifestations, primary or secondary, the symptoms are generally the same. The lesions are closely set, shining, firm, reddish papules, infiltrations of a dull-reddish hue, miliary and pigmented deposits, tubercles varying in size, subcutaneous nodules, and secondary results in the way of formidable ulcers, crusts, and fungous growths.

The prognosis is serious.

Pathologically, the several forms of carcinoma above described are epitheliomatous, since the fibrous stroma always contains, in the centre of narrow alveoli, a relatively small number of epithelial bodies. The growth is usually slow of development, but in the end is accompanied, as are other cancerous tumors, by adenopathy, pain, and ulcerative changes, which induce an inevitable cachexia. As with the other varieties, relapse after extirpation is common, and the prognosis is proportionately grave.

TUBEROSE CARCINOMA is a rare manifestation of the disease, occurring in the form of multiple, firm, peanut- or egg-sized, roundish nodules, which break down by ulcerative processes into deep losses of tissue. It is frequently accompanied or followed by cancerous involvement of other organs. It occurs chiefly upon the face, hands, arms, and chest, though also upon other portions of the skin of persons of advanced years, either as a primary or a secondary cancerous manifestation. Guinard³ reports a cancer of this variety, remarkable for the smallness of the existing nodules, which varied in size from that of a hempseed to that of a pea. They covered the entire thorax, the back, and the right arm; and had here and there broken down into ulcers. One of the latter was as large as the hand.

MELANOTIC OR PIGMENTED CARCINOMA is that form in which both the epithelium and connective-tissue framework of the cancer are richly supplied with blood-vessels, and, probably, as a consequence of transudation from the latter, with an abundance of pigment-granules in groups and clusters. These growths usually begin as hempseed- to pea-sized, single or numerous, soft or dense nodules, which may develop in time into tumors of considerable size, and which are stained in various shades from a grayish-brown or a slate color to a dead black,

¹ Amer. Jour. Med. Sci., March, 1882.

² Jour. Cutan. and Ven. Dis., June, 1884, p. 1.

³ Union Méd., February 5, 1881.

the pigment being occasionally displayed irregularly in streaks or bands over the surface of the growth. They occur over any portion of the surface, often upon the extremities and the genitals, starting frequently from benign pigmentary lesions, such as *nævi* and moles. Anatomically, the pigment is found to be deposited both between the cells and in the protoplasm of the cells themselves.

In a few instances the disease is limited to single melanotic growths of this character. The cancer is apt to develop into the papillary form, furnishing thus fungoid vegetations which have a noteworthy tendency to degenerate into ulcers. Often such verrucous masses are seen surrounded by grayish or blackish papules, or by a diffuse cancerous infiltration of the integument; they also exhibit irregular pigmentation of the surface. The disease often appears in the viscera, in the form of disseminated cancerous nodules, each highly vascular, and exhibiting in varying quantity granules of pigment. The growth has usually a relatively rapid course and malignant career. Relapses are frequent, the amount of pigment usually increasing with each relapse.

Recent investigations (Cf. melanotic sarcoma) indicate that the majority if not all of the malignant pigmented growths which spring from moles and *nævi*, and which in the past have been considered to be sarcomatous, are in fact instances of pigmented carcinoma.

ENDOTHELIOMA of the skin has been reported in a few cases. In the three cases reported by Spiegler,¹ and in the three cases collected by him from literature, numerous tumors, varying in size from a pin to an orange, were located on the scalp. In some of the cases pea-sized tumors were seen also upon the face, neck, back, and chest. The course of the growths was comparatively benign. In Fordyce's case² a pea-sized tumor formed at the border of a lupous scar on the forearm. The histological structure of these growths is that of a small-cell epithelioma, except that the cells are grouped about dilated blood-spaces, and their origin from the endothelium of the blood-vessels can be demonstrated.

¹ Arch. f. Derm. u. Syph., 1899, Bd. 1., S. 163.

² Amer. Jour. Med. Sci., August, 1900.

CLASS VII.

SENSORY DERMATO-NEUROSES.

A LARGE number of skin-diseases are more or less dependent on neuropathic conditions, and could probably be classed as sensory, motor, vasomotor, or trophic dermato-neuroses. Morris¹ and Leloir,² and a few others attempt such a classification; but in the large majority of these dermatoses the neuropathic element is not so well understood as are some other features according to which most authors classify these affections. In this chapter are considered only the sensory dermato-neuroses, that is, those disorders in which there is disturbance of sensation without other recognized changes in the skin.

These purely sensory dermato-neuroses are commonly described under four headings: hyperæsthesia, anæsthesia, dermatalgia, and paræsthesia (including pruritus).

Bronson³ calls attention to the fact that cutaneous sensation is complex and made up of a number of elements which he describes as common sensation (or mere subjective feeling), including the sense of pain; the sense of temperature; the sense of touch, including the pressure-sense and the sense of contact; and a special sense of a higher order, which is exercised in feeling for or of a definite object, and which he terms the sense of PSELAPHEGIA. This sense includes and is dependent upon the preceding elements, and is ranked with the special senses of seeing, hearing, and smelling. Any one of the above-named senses may be exaggerated, defective, or perverted, while the others remain normal, or all may be involved simultaneously.

HYPERÆSTHESIA.

(Gr. *ὑπέρ*, above; *αἰσθησις*, sensibility.)

Hyperæsthesia is an exaggerated sensitiveness to external impressions. In this condition the abnormal sensations are aroused by contact with an external body, and do not arise spontaneously, as in dermatalgia and in paræsthesia. The distinction between these conditions may often be difficult to recognize, since two or more of them may coexist; or the hyperæsthesia may be so excessive that the slightest unrecognized current of air is sufficient to produce a marked sensation. Finally, in some forms of hyperæsthesia abnormal sensations may result from irritation due to mental or emotional causes. It is evident that this

¹ Diseases of the Skin. London, 1898.

² Twentieth Century Practice, vol. v.

³ Morrow's System, vol. iii., p. 725; and N. Y. Med. Record, Oct. 18, 1890.

last type of hyperæsthesia can be differentiated with difficulty, if at all, from paræsthesia.

Cutaneous sensation may be exaggerated as a whole, but the senses most commonly involved are those of contact and common sensation, including the sense of pain. In mild cases there is merely an unusual sensitiveness to contact with foreign bodies, such as the clothing, but in severer forms the light touch of a feather or slight currents of air over the skin may be almost intolerable. In the condition known as *HYPERALGESIA* the sense of pain is greatly exaggerated, while the sense of touch is diminished. As a result, the slightest contact with an object causes great pain, but the nature of the object causing the pain is not recognized so distinctly as in health. In some instances it is the temperature-sense alone that is involved, as a result of which the surface is exceedingly sensitive to cold, or, more rarely, to heat.

Hyperæsthesia, involving one or all of the senses mentioned above, may be mild or severe, and may be limited to very small areas, as in *tabes* or *leprosy*; to certain regions or to one side of the body, as in *hysteria*; or it may include the entire surface, as in disease of the cord, in *neurasthenia*, and in other disorders of the nervous system.

The causes of hyperæsthesia are found in various functional and organic disorders, central or peripheral, of the nervous system.

In connection with the hyperæsthesiæ may be mentioned a condition which cannot be considered pathological in itself, though it is often dependent upon pathological states. Reference is made to the unusual development and acuity of the touch-perception, or sense of *pselaphagia*, as a result of which contact with a foreign body gives the perceptive centres a more delicate and complete impression of that body than would normally be obtained. This unusual sensitiveness of the touch-perception is seen frequently in the blind, and may even be cultivated. It occurs also in the hypnotic state; in intoxication from alcohol, or from *cannabis indica*; in *hysteria* and some other mental and nervous disorders; and in conjunction with the other forms of hyperæsthesia.

Treatment is that of the nervous disorder upon which the hyperæsthesia depends.

DERMATALGIA.

(NEURALGIA CUTIS.)

In this morbid state the integument becomes the seat of painful sensations, which may or may not be associated with a hyperæsthetic condition. This disorder is much more frequently partial than general, being in the larger number of cases a local expression of some disease of the nervous centres or tracts. It is observed usually in middle life, and in women more than in men. Its symptoms vary in severity from a slight burning to a state of torture that defies description. In character the pain is differently described as comparable to that produced by friction, incision, penetration, contusion, or burning of the integument, as also to the passage over the part of streams of very hot or of cold water, or the electric current. With this there is commonly associated an undue sensitiveness to contact with foreign bodies. The skin presents no objective signs of disease. The disordered sensations may be

limited to the scalp, the region of the spine, or the palmar and plantar surfaces. In the latter situation it is often significant of some obscurely developed systemic disease, such as syphilis, rheumatism, or locomotor ataxia. In a middle-aged woman a persistent dermatalgia of the interscapular region was associated with confirmed gastric dyspepsia. In other cases the disorder is dependent upon disturbance of the uterine function. It is occasionally observed as one of the rare signals of the occurrence of the menopause.

It is to be noted that the severe dermatalgia associated with disorders of the uterus in women is occasionally succeeded by a cutaneous lesion. In a middle-aged dysmenorrhœic patient under observation a pea-sized hemorrhagic bulla appeared over the forehead after several weeks of frontal suffering. Buck¹ also reports dermatalgia of the brows and wrists in a young woman who had frequently miscarried, followed by recurrent formation of a vesicle which accomplished its career of rupture, crusting, and erosion in a stadium of from five to seven days.

Diagnosis.—The disease is to be differentiated from hyperæsthesia of the skin, with which it frequently is associated and from which it often cannot be distinguished with certainty, as it is not possible always to exclude slight sources of external irritation; and further the diagnosis must be based largely upon the observations and statements of the patient. Painful affections of deeper parts, muscular, nervous, aponeurotic, and visceral, must also be excluded. Severe pain limited strictly to the skin of the lumbar region, with hyperæsthesia, may precede the occurrence of perinephritic abscess.

The **Treatment** is to be directed to the disorder of which, in the great majority of cases, the dermatalgia is merely a local symptom. Quinine, the salicylates, iron, arsenic, and zinc phosphide are often indicated. Temporary relief, however, may be afforded by the local application of a rubber bag filled with very hot or very cold water; sometimes by an alternation of the two, each for a few moments at a time. Sponging the part with very hot water is also useful, continued for longer periods, and followed by swathing in cotton-batting covered with Lister protective. In some cases the anodynes also may be used topically with advantage; especially cocaine, opium, aconite, belladonna, or stramonium in oily combinations. In some cases relief is had by painting the parts with Squibb's mercuric oleate and morphine. The skin should generally, in the interval of application, be protected by a dusting-powder; and the clothing worn next the skin should be of an unirritating character.

ERYTHROMELALGIA is a term given by Mitchell to a condition in which the fingers or toes are the seat of burning or aching pain followed by areas of redness. Other observers report cases occurring in connection with multiple sclerosis, tabes, myelitis, meningitis, traumatic neuroses, and other nervous disorders. Mitchell and Spiller² found a peripheral neuritis in one case.

¹ Phila. Med. and Surg. Reporter, Jan. 18, 1881, p. 677.

² Amer. Jour. Med. Sci., January, 1899.

ANÆSTHESIA.

(Gr. *α*, privative; *αἴσθησις*, sensibility.)

In cutaneous anæsthesia one or all of the elements of cutaneous sensation may partially or wholly be lost.

ANALGESIA, or insensibility to pain, may exist while the tactile sense remains unimpaired, or the reverse may be true. THERMO-ANÆSTHESIA may alone be manifested, and sometimes is limited to heat alone or to cold alone. A curious illustration of this occurred in the person of a leper, whose hands were in all parts sensitive to the prick of a lancet and to contact with heated substances; yet who exposed them for hours without protection to an atmospheric temperature of ten degrees below zero without even slight discomfort.

The tactile sense is involved more frequently than in hyperæsthesia, and usually is absent in all cases of anæsthesia. It, however, may be retained unimpaired with loss of one or all of the other elements of cutaneous sensation, as sometimes occurs in anæsthetic leprosy or syringomyelia. The failure to appreciate some one or more properties (such as form, size, weight, density, and smoothness or roughness) of foreign bodies may be psychical in origin.

Illustrations of cutaneous anæsthesia are furnished in the anæsthetic patches of leprosy, which may or may not exhibit textural skin-changes; centric and eccentric paralyses; syphilitic, hysterical, and ataxic disorders; partial or complete anæsthesia of artificial production; the several toxic narcoses; traumatism of nerves by pressure, wound, or contusion; the local anæsthesia induced by cold, frigorific mixtures, and substances capable of benumbing the sensitiveness of the skin; coma, of whatever origin; and a number of idiopathic cutaneous disorders, including several of the atrophies, scleroderma, and morphœa.

PARÆSTHESIA.

In paræsthesia there is a perversion of sensibility, as a result of which a given stimulus produces a sensation different from that which it would produce in health. One or all of the elements of cutaneous sensation may be involved. Contact with a warm object may give a sensation of cold or of pain. Derangement of the tactile sense may give erroneous impressions of the size, weight, roughness or smoothness, firmness, or other qualities of an object. Many other perversions of sensation occur, all dependent upon central or local disorder of the nervous system. Sensations may be delayed for some seconds after contact, or may persist after the latter has ceased.

There may be an error of location, as when the patient refers the point of contact to the wrong place or to the wrong side. The paræsthesia may be largely or wholly subjective, and frequently gives rise to the sensation of heat or cold, formication, tickling, dripping or pouring of liquids of various temperatures, etc.

PRURITUS.(Lat. *prurire*, to itch.)

Symptoms.—Pruritus is a common form of paræsthesia which is to be distinguished not only from prurigo, a rare disease of the skin already described, but also from the symptomatic sensation of itching which is occasioned by a number of cutaneous disorders, such as eczema, scabies, and the dermatoses produced by pediculi.

Hebra was first to recognize the independent character of the disease here considered; but it is to be regretted that he did not give to it a name distinct from that which is also applied to a symptom common to several maladies of the skin.

Pruritus is characterized by a sensation of itching not produced originally by cutaneous lesions. It may be general or be partial. In either form it begins usually by a tickling, pricking, crawling, or itching sensation in the skin, which solicits the sufferer to rub, press, scratch, or otherwise irritate the affected integument. It usually occurs by accesses in the day or the night, much more often the latter, occasionally both; and these accesses most frequently occur under the immediate stimulus of some internal or external cause. Thus, moral emotions, a draught of cool air, the warmth perceived when in bed, the pressure of clothing, and often the substances applied externally with a view to the relief of the pruritus, suffice to determine a crisis. However firmly the sufferer may determine to avoid injury to the person, in well-marked cases the impulse to scratch becomes well-nigh irresistible and in the highest degree tormenting. From the milder, the patient will thus frequently be teased to inflict the severer injuries upon the skin. Brushes, combs, coarse cloths, and even metal instruments are employed in severe cases for the purpose of assuaging temporarily the local distress.

The objective cutaneous symptoms which may be presented are all secondary, and invariably result from self-inflicted injury. In some cases they do not appear, the statements of the patient being the sole basis for the recognition of the disease. This absence may be the consequence of unwonted self-control, or of the mildness of the malady, or of the transitory character of the lesions produced. Thus, the skin may be reddened during a nocturnal paroxysm under the manipulation of the sufferer, and the transitory hyperæmia disappear in the daytime when the skin is submitted for inspection. Not rarely, however, the integument resents the treatment to which it is subjected, by displaying wheals, hyperæmic blotches, reddened papules, excoriations, characteristic "scratch-lines," and the minute blood-crusts which indicate that the papillary layer of the derma has been reached and slightly torn. Dermatitis in varying degrees, and even eczema, may result, and still further add to the subjective distress. Skins that for years have been the seat of a persistent pruritus leading to traumatism of the epidermis frequently show smaller or larger areas of deep pigmentation.

Cases are reported by Leloir and others in which a pruritus was followed by a dermatitis not due to traumatism, and persisting for considerable periods of time or until relieved by treatment directed to the

condition of the nervous system. These cases are called by the French *NEURODERMIA*, or *NEURODERMATITIS*, and are probably due to vaso-motor or other neurotic disorders.

SENILE PRURITUS is a term often loosely applied to any form of the disease occurring in the aged, in whom it is very common. In the large majority of cases, however, careful search will disclose causes identical with those found earlier in life. Among the most common of these causes are: defective digestion, metabolism, assimilation, and elimination, with the resulting hepatic, nephritic, circulatory, arthritic, and neurotic disorders so frequently seen in those advanced in years. Senile pruritus proper is that form of the disease due to atrophic and degenerative changes in the skin and other tissues of the aged, and is practically remediless.

PRURITUS HIEMALIS is considered at the close of this chapter.

The localized forms of pruritus, albeit the abnormal sensation is in them limited to certain regions of the body, may occasion fully as much distress as those in which a larger part of the integument is affected. They are of more frequent occurrence than the generalized forms. Pruritus of the anus, of the scrotum, of the vulva, of the vagina, of the scalp, of the nose, of the mouth, of the axillæ, are all localized forms of the disease, two or more of which may coexist or may develop in succession.

PRURITUS NARIUM is a frequent symptom of irritation of the Schneiderian membrane. It is thus a common precursory or an attendant phenomenon of rose- or hay-asthma; and in some individuals announces the systemic effect after ingestion of opium and its alkaloids. It occurs also in children as a result of pediculosis of the scalp. It may result, further, from the irritation awakened by intestinal parasites.

PRURITUS GENITALIUM is often an exceedingly severe and distressing affection. As the parts in question are apt to be rubbed and scratched in efforts to secure relief of the itching sensation, there may be produced orgasmic effects and pollutions, the moral results of which are degrading. The scrotum, the labia majora and minora, the penis, the clitoris, and the adjacent cutaneous and mucous surfaces may be the seat of the pruritus. Search should always be made in these cases for ascarides of the rectum or of the vagina, for saccharine and albuminuric urine, and uterine or ovarian affections. A perverted sexual hygiene may lie at the root of these disorders. In severe cases the violence with which the parts are attacked suggests frenzy on the part of the patient, who at times is never content until the scrotum or other parts are bathed in blood. The thickening, erosions, and excoriations of the regions attacked are conspicuous features of the disease.

PRURITUS ANI.—This is a disorder of adults of both sexes, and it may coexist with pruritus of the genital region. There is usually nocturnal exacerbation. The anus may become infundibuliform from induration; its mucous surface excoriated; its cutaneous borders seamed, puckered, eroded, and fissured. It is often complicated with, because the origin of, an eczema the lesions of which reach upward over the coccyx or forward to the genital region over the perineum. Hemorrhoids, fistula in ano, ascarides, chronic prostatitis, rectal impaction

and fissures, proctitis, unnatural practices, gout, alcoholism, albuminuria, or diabetes may each be responsible for its occurrence.

PRURITUS PALMÆ ET PLANTÆ is a rare form of this disorder, in which the itching is limited to the palms and soles. It may complicate gout, malaria, hyperidrosis, and asthma.

PRURITUS LINGUÆ is reported in a few instances. It usually is due to a central neurosis, to glycosuria, or other systemic disease.

In all severe forms of pruritus cutaneus the general health perceptibly fails. Whether the prolonged insomnia arises from nocturnal exacerbations to which there are but few exceptions; or from the perversion of nutrition incident to the continuous teasing of the nervous system; or yet from the hypochondriacal state into which some patients are plunged by their sufferings, such an issue is often to be expected. It is, in fact, a complication that may merit, as much as the disease itself, the attention of the physician.

Etiology.—The causes of pruritus are numerous, and the necessity for the discovery of the particular cause in each patient often makes the largest demands upon the practitioner. The disease may occur at all periods of life and in both sexes, but its aggravated forms are peculiar to middle life and advanced years. It is always secondary to some disturbance of the nervous system. It is frequently the symptom of one of several internal disorders, such as malarial affections, tuberculosis, carcinoma of the viscera, disorders of the liver or kidneys (especially jaundice, Bright's disease, and diabetes), and disturbances of the alimentary canal, including those due to intestinal worms, hemorrhoids, and dietetic or medicinal ingesta. It is common in the gouty, the rheumatic, and the neurotic, and undoubtedly is due often to auto-intoxication. It is often reflex in character, and may be associated with almost every one of the functional, and not a few of the organic, disorders of the uterus and ovaries. The same may be said of its dependence upon the genito-urinary diseases of the male sex, including stone in the bladder, stricture of the urethra, disorders of the testes and epididymis, and perverted sexual hygiene. Through the reflex sympathy of one part of the skin with other regions it is not at all unusual for one point of pruritus to be the exciting cause of new foci of the disorder, even at some distance from the original seat of itching. A predisposing cause may often be found in hyperæsthesia, either inherited or acquired (sometimes as a result of long-continued inflammatory dermatoses, such as eczema), as a consequence of which insignificant external irritants cause pruritus. Bronson thinks a diminished tactile sense, which implies an imperfect conduction of sensory impressions, is often a predisposing cause.

Lastly, moral emotions of a depressing character play an important part in the etiology of pruritus. Mental distress occasioned by bereavement, separation from relatives, misfortune of all sorts, and anxieties as to the future, often find physical expression in the disease.

Pathology.—The disease is essentially a functional disorder of the nerves of sensation supplied to the skin, and of itself is incapable of

producing objective symptoms. This fact can, in some cases, be clinically demonstrated, as the seat of the pruritus, even though exhibiting artificially produced lesions, will, when protected from external injury, speedily regain its normal appearance, the pruritus no less continuing. It is probable, though not certain, that the nerves also in this disease undergo no structural change, but merely convey to the periphery a perverted sensation that is often reflected from some centric point of disturbance.

Diagnosis.—The recognition of general pruritus is usually not difficult, though the secondary results of the disease are apt to be less characteristic than its early phenomena. The complaint of the patient, the absence of cutaneous disease sufficient to explain the symptoms, and especially the discovery of an efficient cause in some visceral or systemic disorder, are all significant.

One of the most constant features of general pruritus is visible only when the clothing of the patient is entirely removed. It then becomes evident to the eye that the affected regions are, in the order of frequency, those most accessible to the hands. The posterior are much less involved than the anterior body-surfaces. The small of the back and interscapular regions are usually untouched. The tibial regions of the legs and the forearms suffer more than the calves and the upper arms. The lower belly and inner faces of the thighs are punished more severely than the breast and outer faces of the thighs and the hips. The clavicular regions are more excoriated than the back of the neck. There is no more diagnostic sign of pruritus than this, and it is one too often ignored by the practitioner, who prescribes under these circumstances for a "disease of the blood."

It must be admitted, however, that when the disease is localized and complicated, as it frequently is, by an eczema or a dermatitis, doubt may arise. Attention should then be paid to the history of the disorder, which may reveal the fact that the pruritus preceded for some time the cutaneous symptoms, and may disclose even more. Intelligent patients will often assure the physician of the real nature of the malady, by voluntarily remarking that the skin-symptoms disappear upon the region that is not scratched, though the pruritus continues. In all cases the influence of externally operating agencies should carefully be eliminated.

Prurigo, with its infiltrated skin, its primary papules, and its severe itching, beginning in early infancy and commonly persisting through life, can scarcely be confounded with pruritus cutaneus.

Treatment.—The degree of success to be obtained in the treatment of pruritus cutaneus is largely proportioned to the skill with which the cause of the disease is recognized and remedied. Taking into consideration the number of systemic and visceral disorders which may in different cases be responsible for the skin-symptoms, it is clear that an exhaustive study of the mental and physical history of each patient will be essential at the outset of treatment. The cause once recognized, the treatment should be directed to the special disorder discovered; and this largely requires the skill of the general practitioner. The gastrointestinal tract, the kidneys, the liver, the bladder, the uterus, the

prostate gland, the rectum, and indeed any one of the viscera, may require therapeutic management. All internal causes of cutaneous irritation should as far as possible be removed, and to this end attention should particularly be directed to any medication to which the patient may have been subjected, and which may have aggravated the complaint, and also to the diet, which should be regulated in accordance with the principles given under *Urticaria* (page 194) and *Eczema* (page 346).

In atonic conditions strychnine, iron, and other tonics are indicated. The nutrition of the nerves and of the skin can often be improved by the judicious use of cod-liver oil and other fats.

The attempt to relieve pruritus by the internal use of sedatives is not to be commended except in extreme cases. The narcotics, while they may give temporary relief, tend to relax the skin and in the end to aggravate the disorder. This is especially true of the preparations of opium. The bromides, antipyrin, phenacetin, sulfonal, or even chloral may be given for brief periods in extreme cases, but always with the understanding that any one of these remedies, after temporary relief, may aggravate the condition for which it was given. Furthermore, there are strong reasons for refusing to employ in pruritic disorders preparations containing opium, cocaine, cannabis indica, conium, and other drugs intended to relieve the subjective sensations by internal medication. Many well-nigh incurable cases of the "cocaine-habit" have been begotten by treatment of this sort when the patient, often a nervous woman with an intolerable pruritus vulvæ, is in a condition peculiarly susceptible to the action of remedies of this class. The latter should always be regarded as the last resort of the practitioner, and a confession of weakness in not discovering the special cause effective in the case with which he is for the time confronted.

Cathartics and laxatives and an abundant supply of pure water internally employed as directed for relief of acute eczema (pp. 335, 336), as well as diaphoretics and diuretics, are often of value in eliminating toxins to which pruritus may be due; in depleting the cutaneous vessels; and possibly in a reflex way by diverting irritation to other regions. Jaborandi and pilocarpine have thus been employed to advantage. In children full doses of quinine sometimes relieve pruritus, while in adults large doses of calcium chloride occasionally will accomplish the same result. Cannabis Indica and gelsemium at times are effective, but should be prescribed with great caution.

The indications for local treatment are to protect the skin from all sources of irritation and to relieve the itching. Hyperæsthesia of the skin is common in pruritus, either as a predisposing cause or as a result of long-continued pruritus. In consequence very slight external irritation may suffice greatly to aggravate the itching, and every precaution should be taken to protect the skin from exposure of all kinds. First in importance is the clothing. The garments worn next the skin should be of cotton, lisle-thread, linen, or silk, never of wool, and the meshes should be filled with an impalpable powder to reduce to a minimum the friction of the garments on the skin. All other clothing should be as light as possible and yet be warm enough for protection. If the

patient live in a climate where sudden changes in temperature are common, the clothing should be regulated accordingly. The object is to keep the skin at an even temperature and to protect it from sudden changes. In cases in which the pruritus is due largely to the hyperæsthesia the itching may be entirely relieved by dusting the surface with a simple powder and completely covering it with a layer of cotton-wool or other protective dressing.

Hot baths, unless specially indicated, and the too free use of soap may render the skin unduly sensitive. The bran, oatmeal, alkaline, and other demulcent baths recommended in the chapter on General Therapeutics are those most generally useful. After the bath the surface should be patted (not rubbed) dry and covered with a dusting-powder or other selected application. When the skin is free from excoriations and other lesions the cold douche, alternate hot and cold douching or sponging, or even the cold salt-water sponge may be used to improve the tone and vigor of the skin. For localized pruritus hot baths of four or five minutes' duration, followed by drying and the immediate application of a protective dressing, are often grateful and beneficial. The water should be as hot as can be tolerated, and to it may be added borax or sodium bicarbonate.

Scratching is a common source of irritation and one that is difficult to set aside. Until this is accomplished, however, relief cannot be obtained, as whenever the skin is scratched or rubbed there is produced a local hyperæmia, or even a dermatitis, which adds to the cutaneous irritation, not only at the site of the rubbing, but also by reflex action in other regions of the body. It is not sufficient to tell the patient not to scratch; the surface must be protected by proper dressings, and the itching relieved by the use of antipruritics. Bronson suggests that patients be allowed to obtain relief at times by firmly pressing upon the surface or by gently drawing over it an oiled or a wet cloth.

The substances which have been employed topically for the relief of pruritus cutaneus are almost without number, a fact warranting the conclusion, corroborated with every wide clinical experience, that each occasionally fails to afford the desired relief. That preparation, moreover, which is at one time of the highest value, at another period in the history of the same case will disappoint. Attempts to secure relief by such topical applications should, however, always be made, and will often be followed by gratifying results.

The sedative and antipruritic lotions, liniments, and dusting-powders described on pages 342-345, together with their methods of preparation and application, are valuable and sufficient in most cases. They may be further modified by the addition of substances recommended in the following paragraphs. The dusting-powders are of special value in furnishing mechanical protection. When a decided antipruritic effect is desired the Anderson, or a similar, powder may be used. In some localized forms of pruritus more complete protection with ointments, pastes, or even the glycogelats, may be secured.

Of all antipruritics, carbolic acid easily takes first place. In most of the lotions recommended above it is used in strength of 1 to 5 per cent. In oils or liniments it may be used much stronger. Bronson

uses it even to 25 per cent., stating that it is much more slowly absorbed than in aqueous solutions, and therefore less likely to produce systemic effects. A favorite formula with him is the following:

R	Acid. carbolic.,	℥j-ij;	4-8	
	Liq. potass.,	℥j;	4	
	Ol. lini,	℥j;	30	M.

It is to be shaken before using, and may be scented with bergamot. These stronger preparations of carbolic acid, even in the oils, should be used over only small areas, for fear of toxic effects.

Other remedies that may be used in lotion, oil, liniment, ointment, or paste, in strengths varying from 1 to 5 per cent. or more are: salicylic acid, hydrocyanic acid, menthol, camphor, thymol, salol, creosote, chloral, and chloroform. Two or more of these remedies may be combined in the same lotion. Morphine, atropine, and cocaine may be added to lotions with occasional advantage.

Ointments and pastes are irritating to many pruritic skins, but at times are more acceptable than the lotions and oils.

Chloral-camphor, a pungent, syrupy liquid obtained by triturating an equal amount of the two substances in fine powder, is an anti-pruritic remedy of value in certain cases if applied in a salve containing 1 drachm (4.) to the ounce (30.) of salve, and is comparable in its action to phenol-camphor, described in the chapter on General Therapeutics. Among other remedies occasionally of service are ichthyol, resorcin, and mercuric chloride. Bronson speaks highly of hydrogen peroxide. The preparations of tar are not well tolerated as a rule, but in some instances are exceedingly valuable. The liquid preparations (page 352) are to be preferred. In atonic cases, with diminution of the tactile sense, the use of electricity over the spine has been followed by good results.

In SENILE PRURITUS the progressive atrophy and degeneration of tissues may be checked or retarded by management proper to each case. Locally, electricity or hot and cold douches may aid in stimulating the skin to renewed vigor.

Treatment of the regional forms of pruritus is that above described, with such modifications in the dressings as may be necessitated by the special location.

In anogenital pruritus the hot bath described above at night is especially to be recommended. Exception should be made here to the rule with regard to the exclusion of tars generally from the treatment of pruritus, as in the distressing itching of the scrotum and the anus they are often essential. The tincture of tar, oil of cade, and oil of white birch will here often be needed. Fissures and areas of infiltration may be painted with compound tincture of benzoin or solutions of silver nitrate containing gr. x to ℥j (0.66-4.) to the ounce. The scrotum when attacked usually requires the use of a suspender, or suspensory bag, lined with soft lint or with borated cotton, which may be covered with a dusting-powder, wetted with a lotion, or smeared with an unguent.

For pruritus of the vulva Wiltshire¹ recommends decoctions of

¹ Brit. Med. Jour., March 5, 1881, p. 328.

almond-meal, marshmallow, slippery-elm, and rice; and in case of failure of the latter, an infusion of tobacco 2 ounces (60.) to the pint (480.). Vaginal injections of hot water, and tampons or cocoa-butter suppositories medicated with opium, belladonna, or carbolic acid, are also available. Mercuric chloride lotions [gr. $\frac{1}{4}$ -j to $\bar{3}$ j (0.016-0.06 to 30.)] are recommended by many writers.

Iodoform, oleate and muriate of cocaine, the latter in from 2 to 4 per cent. solutions; 1 ounce (30.) of the fluid extract of coca, to 2 or 4 (64.-128.) of water; and linseed oil (especially for pruritus ani), are also recommended.

Jullien recommends in pruritus of the vulva:

R	Zinc. oxid.,	$\bar{3}$ vj;	24	
	Acid. salicylic.,	gr. xv;	1	
	Glycerin.,	$\bar{3}$ vj;	24	M.
Sig.	Apply as required.			

Chéron, in pruritus of the vulva attending the menopause, has successfully used:

R	Veratriæ,	gr. iij;	20	
	Axung.,	$\bar{3}$ j;	30	M.

He also administers in pill-form $\frac{1}{120}$ grain of veratria rubbed up with licorice.

Squibb's formula is:

R	Acid. tannic.,	Đj;	133	
	Glycerin.,	āā 3ss;	āā 15	M.
	Spts. vin. rectific.,			
	Aq. dest.,			
Sig.	Apply morning and evening on a rag.		ad 120	

Lastly, it should not be forgotten that many cases of intractable pruritus are best managed when the attention of the patient is diverted from the malady by the distraction incident to travel, aided by change of scene and climate.

Prognosis.—Pruritus senilis is usually an intractable disorder, and when dependent upon senile alteration of the cutaneous tissues is incurable. For all other forms of the disease a prognosis should be formulated with reserve. Under the influence of systematic and appropriate treatment the happiest results are often obtained. Other cases, especially those associated with hypochondriasis, may bid defiance to all medicinal measures. Relapse of the local forms of the malady, especially of that of the anogenital region, is common. In many of these patients the treatment serves merely to palliate the disorder, which recurs with every renewal of the cause.

PRURITUS HIEMALIS (PRURIGO HYEMALIS, "FROST ITCH," WINTER PRURIGO).—Under the first title Duhring¹ described a harsh

¹ Phila. Med. Times, January 10, 1874. See also a later but independent observation by Hutchinson: Lectures on Clinical Surgery, 1878, vol. i., pt. 1, p. 100; and Brit. Med. Jour., 1875, ii., p. 773.

and pruritic condition of the skin, essentially unattended by structural alteration, invading all surfaces of the body, but chiefly the inner faces of the thighs, the calves of the legs, and the neighborhood of the joints of the lower extremities, usually occurring in the autumn and continuing until the following spring. It possesses many features in common with the forms of pruritus already described, including variability in the subjective sensations awakened, nocturnal exacerbation, and the absence of primary eruption. The secondary results are also similar, being sequels of self-inflicted injury in the form of roughness, perifollicular redness and papulation, torn and fractured hairs, excoriations, blood-crusts, and, in severe cases, an induced dermatitis. It, however, abates in severity with a rise of atmospheric temperature, though there is occasionally noted persistence of the distress after such weather-changes. The affection, moreover, is one which occurs in persons otherwise enjoying perfect health, in those of every social grade, irrespective of the character of the clothing worn and of the habitual use or the neglect of the bath. It is, without question, a disease of northern climates, more particularly of those where the variations of temperature between the extremes of the summer and of the winter range between -30° F. and 100° . The description by Dühring presents a picture (with an accuracy verified by clinical observation) which justifies the recognition of the disease as a form of cutaneous pruritus. Its treatment is that detailed above, the author named laying stress upon emollient unguents, glycerin in the form of lotion or ointment, and alkaline baths. The dusting-powders, when employed after the tepid bath, have proved more serviceable than any fat-containing substance.

PRAIRIE ITCH.—This is a popular term applied largely in the Western, Northwestern, and Southern States of America to a cutaneous affection productive of itching sensations. It is supposed to be the disorder popularly described also as the “TEXAS MANGE,” “OHIO SCRATCHES,” “SWAMP ITCH,” “LUMBERMAN’S ITCH,” etc. A parasitic origin has been claimed for it by several observers who also insist upon its contagious character and its curability by parasitocides.

Personal experience has led to the conviction that these terms are loosely applied to a group of cutaneous symptoms of diverse origin. The most frequent by far is a pruritus, of the kind described above as pruritus hiemalis, occurring in the autumn, winter, or spring of the year, and aggravated by the coarse and cheaply dyed woollen undergarments of the poor and hard-working inhabitants of lumber-camps, mining-districts, etc. With these causes in full operation, there is often aggravation after swallowing drugs for relief of the pruritus, based upon the idea of “purifying the blood.”

With these pruritic cases occur those of undoubted scabies, for the study of which the reader is referred to the chapter devoted to that subject. The proportion between the purely pruritic and parasitic cases of this class cannot definitely be determined. It probably varies in different places and seasons, the proportion of cases of scabies increasing in the lumber-camps when they are reinforced by newly

arrived immigrants infested with acari. It decreases to probably not more than from 1 to 2 per cent. of all skin-diseases in the interior villages and towns of the West and Northwest where there has been no immigration for some length of time, and where, after the first onset of sharply cold weather in the autumn, a large part of the inhabitants suffer from pruritic sensations in various degrees.

A review of the somewhat scanty literature of this subject¹ suggests the conclusion that the disorder popularly designated as "prairie itch," etc., is far more rare in Europe than in America. It is possible that the situation of those parts of the United States where this group of skin-affections seems to prevail (at a great distance from proximity to the seashore, and still further separated from the Gulf-stream) may play an important part in the extraordinary sensitiveness of the skin to climatic changes. Certain it is that a great number of these affections are entirely relieved by removal to a suitable climate, more particularly to one of the Eastern, Southern, or extreme Western States.

Treatment.—The therapy of this affection is that of pruritus, already described, save where a parasite is recognized as the efficient cause, as in cases of scabies.

The **Prognosis** is favorable, though the disease is at times intractable, persisting or recurring with repeated thermometric variations until the warm season is at hand.

MYXŒDEMA.

(Gr. *μύξα*, humor; *οίδω*, to swell.)

(CRETINOID ŒDEMA, CACHEXIA STRUMIPRIVA, CACHEXIA THYROIDEA. *Fr.*, CACHEXIE PACHYDERMIQUE.)

This disorder was first described by Sir William Gull,² in 1873; and it has since been studied, both abroad and in this country, by many observers.

A complete description of the disease and a *résumé* of literature are found in the report of the Clinical Society of London for 1888, and in Murray's elaborate contribution to the same subject, in the *Twentieth Century Practice of Medicine*, vol. iv., 1895. The report embodies the results of the researches of a committee—including Ord, Horsley, and others—specially appointed by the Society to investigate the subject.

Symptoms.—The disease occurs in both acute and chronic manifestations, usually after the fortieth year, and in women more often than in men. It may, however, first be noticed in childhood.

At the outset there is observed a gradually occurring persistent and remediless anæmia, succeeded in turn by mental hebetude, sluggishness of body-movements, and a characteristic change in the integument.

¹ See two papers by one of us, entitled "On the Affections of the Skin Induced by Temperature-variations in Cold Weather," *Chicago Med. Jour. and Examiner*, March, 1885, and February, 1886. Obersteiner: *Wien. med. Woch.*, 1884, No. 16. Brodie: *Peninsular Jour. of Med.*, 1853-54, vol. i., p. 506. Jones: *Kansas City Med. Index*, 1886, with views of several Western physicians. Clark: *Med. Age*, 1886. Payne: *Brit. Med. Jour.*, May 3, 1887.

² *Trans. Clin. Soc. London*, 1874, vii., p. 170.

The skin becomes dry, rough, yellowish, waxy, translucent, and firm, and refuses to pit on moderate pressure. The surface involved is commonly the seat of a fine furfuraceous desquamation, the mucous membranes often participating in the morbid process. In the cheeks there is usually perceptible a brawny redness; defined at times as a sharply circumscribed, pinkish flush, due to distention of the minute capillaries, extending quite to the lower eyelids, which may, as in Ball's cases, be wrinkled, boggy, and swollen. The eyes, for this reason, seem smaller than natural and more widely separated. In consequence of the swelling and immobility of the features the facies is characteristic: the broad, thick nose; swollen, pendulous, or even everted lips; expressionless eyes; and leathery cheeks, producing upon the observer the impression of a mask. The skin of the other regions of the body participates in these changes, the backs of the hands, for example, becoming wrinkled or distended, the palms dry and fissured, the feet participating in the same morbid process, the hair falling in nearly 90 per cent. of cases even to the production of extreme baldness, the nails becoming discolored, grooved, and cracked, and the teeth often carious, fragile, or wholly lost. The mucous membrane of the mouth (gums, palate, pharynx) becomes tumid and fungous.

In the triangles at the side of the neck, and also at its back, are "bolsters" of fat. The hair of the head becomes harsh and scanty; alopecia may be complete. Pigment-alterations readily occur; moles increase in size; and the general tint of the skin may vary from that of dry parchment to the hue of Addison's disease. The gait is waddling and uncertain. The thyroid gland atrophies. Anæsthesia is of common occurrence. The tongue, uvula, and fauces are often so thickened and immobile as to make speech slow and indistinct. The temperature is usually subnormal, the mental faculties seriously impaired, the sight and hearing altered, digestion vitiated, and the muscular strength greatly reduced.

The course of the disease is chronic, lasting for years, and terminating usually in a state of marasmus with fatal issue.

Etiology.—The cause of myxœdema is imperfectly understood, though its association with abolition of the thyroid gland (after pathological change or ablation) is generally admitted. Stokes reports ten cases of acute myxœdema following thyroidectomy. In these cases, beside the rapid occurrence of the symptoms enumerated above, there were convulsive seizures of an epileptiform character. Of four hundred and eight complete thyroidectomies analyzed in the Clinical Society's report, in sixty-nine myxœdema developed. The result did not occur when a part of the gland was left. The influence of heredity is distinctly shown in cases reported by Ball, Ord, Saville, and Taylor. The disease affects women more often than men, in the proportion of seven to one. Children are attacked, but the malady is more common in individuals between thirty-five and fifty years of age.

It is undetermined what relations, etiological or other, subsist between the members of an interesting group of maladies, all characterized by cutaneous changes or dystrophy of the appendages of the skin, and total or partial abolition of the functions of the thyroid gland. In this group

are to be named not merely myxœdema, but also myxœdematous cretinism, acromegaly, and Graves's disease. These maladies are denominated by some authors the "thyroid cachexias."

Pathology.—In nearly all cases examined the thyroid gland is found to be markedly reduced in size and its glandular structure seriously impaired by substitution of fibrous connective tissue for the epithelial cells lining its secreting acini. At first there is a small round-cell proliferation, which gives place to changes resulting eventually in a firm thickening of both the gland and its capsule. The lumen of the arteries becomes obstructed; and, in cases, new-formed lymphatic tissue is found surrounding the atrophied lobules.

Examination of affected regions of the skin discloses slight epidermal atrophy, replacement of connective-tissue trabeculæ with fine nucleated fibrillæ, a small-cell infiltration in the upper part of the corium, and an endarteritis obliterans similar to that recognized in the thyroid gland. The epithelium of the coil- and sebaceous glands is the seat of swelling and proliferation, which eventually produces occlusion of the lumen of these emunctories and explains largely the cutaneous symptoms of the malady. The hair-follicles and the nerves (fibrosis of hair-pouch, perineuritis) may or may not be invaded by a similar process.

Diagnosis.—Cases of myxœdema are readily distinguished from those of elephantiasis by the generalization of the symptoms, the nervous state of the patient, the fat-deposits, and the condition of the thyroid gland. Acromegaly involves the bones; in lepra there are commonly anæsthetic symptoms or characteristic tubercles.

The **Treatment** of myxœdema has hitherto aimed at amelioration of the symptoms by the employment of roborant and tonic measures; alkaline and sulphur baths; electricity and massage. The later method of treatment, however, is by thyroid-grafting, by administration of thyroids, and by hypodermatic injection of from 5 to 15 minims of liquid extract.¹ Whether there be employed the gland itself of the sheep, the liquid extract, or the powder skilfully prepared by evaporation, or Vermehren's extract precipitated by alcohol, the results are satisfactory in so large a proportion of cases that the prognosis of this group of disorders presents no longer an element of gravity. The headache, faintness, loss of weight, neuralgias, and even albuminuria, with other symptoms immediately following the employment of the thyroids named above, do not seem to have an adverse influence upon the remoter benefits received from the treatment.

¹ Cf. "Feeding Thyroids in Myxœdema," by J. J. Putnam; Amer. Jour. Med. Sci., August, 1893.

CLASS VIII.

PARASITIC AFFECTIONS.

THE disorders due to invasion of the skin by parasites possess many features in common with those already described. In them, as in others, are observed the hyperæmic and exudative processes which result in surface-lesions of similar type and career. They differ, however, from other affections of the integument in that they are all induced by parasites of either vegetable or animal origin; and are, as a consequence, commonly characterized by certain special features. They involve the skin and its appendages, their symptoms being at times displayed chiefly in the integument proper, and at other times in one or more of the cutaneous appendages, according to the mode of propagation and attack, peculiar in each case to the parasite present. They are all in different degrees contagious; and, being induced by local and tangible causes, are usually relieved by external treatment. Their importance in cutaneous medicine rests not only upon the facts named above, but also upon the too general misconception regarding their nature, since there are many patients treated by internal remedies ingested vainly for long periods of time, who suffer from parasitic disorders often remediable by very simple local measures.

It should not be forgotten, however, that, distinct though these maladies be in an etiological sense, they are yet often practically commingled with others. Thus, an eczematous scalp in a child may by accident become the habitat of lice; and the eczema induced originally by the *acarus scabiei* may persist long after destruction of the parasite.

The term *tinea*, derived from a Latin word meaning "a moth or worm," has by common consent been adopted as a generic designation of the cutaneous disorders induced by the presence of vegetable organisms.

DISORDERS DUE TO VEGETABLE PARASITES.

TINEA FAVOSA.

(Lat. *favus*, a honeycomb.)

(HONEYCOMB RINGWORM, PORRIGO FAVOSA, FAVUS. *Fr.*, TEIGNE FAVEUSE; *Ger.*, ERBGRIND.)

Symptoms.—Favus affects chiefly the scalp, but it also occurs upon the glabrous portions of the skin and upon the nails. In the former situation it is usually first recognized by the development of minute, subepidermic, yellowish or reddish puncta, visible through the translucent stratum corneum at the site of implantation of the hairs. A

circle of delicate vesicles may surround these spots. Puncture with a needle usually gives exit to puriform matter. In the course of a fortnight or more these lesions cover themselves with pin-head to pea-sized and somewhat larger, friable, circular, and elevated crusts, having the yellowish tinge of the lemon or of sulphur, and a concavo-convex shape, with the free concave face of the disk exposed. At the centre of the umbilication thus presented to the eye one or several hairs usually make exit to the surface. The inferior surface of this disk, or scutulum, rests upon the scalp, which is either moist and deprived over a circumscribed area of its epidermis, or is smooth, dry, reddened, and tender. When the crust is removed by traction upon the hairs or otherwise a minute cup-shaped depression is left at the point where the lowest level of the favus crust was in intimate connection with the epidermis.

The subsequent features of the crusts, the hairs, and the scalp are subject to variation. The crusts may acquire a brownish or a greenish tinge by admixture with dirt or with dried pus; may coalesce (*favus squamosus*); or may, by gradual desiccation, exchange the yellowish hue for the dirty-whitish shade of old mortar, a substance which they then resemble in dryness and friability. The hairs invaded both in the sheath and shaft may lose their lustre; become fragile; appear as fractured relics of longer filaments; readily be extracted from their follicles; and finally be shed, leaving hair-sacs destined to atrophy and incapable of reproducing a pilary growth. The scalp may first be the seat of an extensive hyperæmia or exudation going on to the formation of pus, when the fungus is a source of acute irritation in consequence of its active development. Later, when its destructive work may be said to have been accomplished, the scalp-surface is bald, irregularly atrophied, or disfigured with cicatrices, which at first are of a deep-red color, but which gradually fade, while here and there remain tufts of hair that have survived the attack.

The lesions may be discrete or be confluent, and may vary in either case. Occasionally but a few small and ill-developed crusts form upon the surface. The entire scalp is not often covered with a confluent favus-crust. The disease is usually chronic in its course. Untreated, it may undergo spontaneous involution after total destruction of all hairs and production of general follicular atrophy, but this is rare. It may last for fifteen or twenty years, and even longer. It is often accompanied by adenopathy.

The disease usually awakens a noteworthy degree of itching, and, as a result, it is not rare to find the favus-crusts torn and broken by the comb or the nails.

The yellowish disks of the disease occur also in typical development, though more rarely, upon the surface of the face (including the bearded cheeks, lips, and chin), and upon the trunks and extremities. Fox, of New York, has photographed a patient's knee which was covered on its extensor aspect with favus-crusts.

When the nails are invaded, light or deep-yellowish, circumscribed spots become visible through the nail structure, and by extension of these, in consequence of the growth of the parasite, the nail-tissue

may be thickened, irregularly split, laminated, separated from its matrix, or atrophied. The complication is rare, and is supposed to be due to transfer of the parasite from the scalp to the hands in the act of scratching. When it exists the epidermis fringing the nail is usually also involved.

Upon the so-called "non-hairy" portions of the body favus occurs in the same forms as elsewhere, the localities in the order of frequency being those most exposed to the hands charged with the parasite, or to other sources of the disease, viz., the hands (chiefly the backs and nails), the upper and lower extremities, and the shoulders. It is a striking fact that favus may exist for years on the scalp without spreading. At a single clinic we have exhibited five patients affected with favus, all scalp-cases, the eldest, a male, twenty-five years of age, who had suffered from the disease for twenty years without occurrence of the lesions elsewhere.

In favus of the body-surface, outside the scalp, there is often a resemblance to ringworm in the production of circular patches with an active border made up of vesicles or of papules, which may have a favus scutulum as a centre; or several of these cups may irregularly be spread over circles of scaling patches. In these cases there is often an acuity of symptoms not observed in scalp-cases and coincident gastro-intestinal signs of irritation, vomiting, etc., which Kundrat believes may originate in favus of the mucous surfaces of the œsophagus and gastro-intestinal tract.

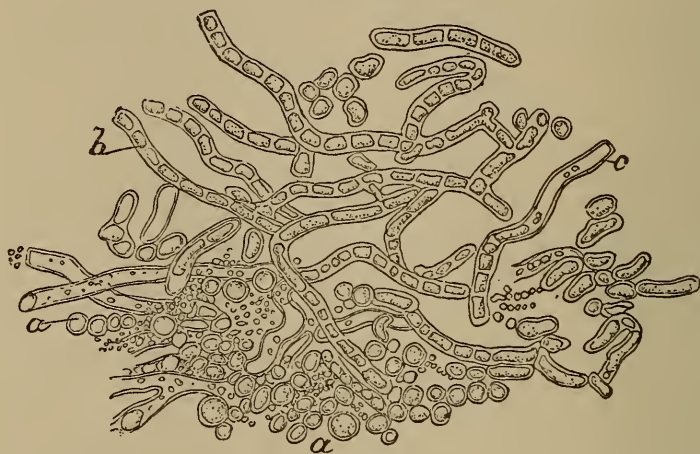
The odor of fully developed favus is so characteristic that by it alone a diagnosis has been established. It is usually compared to the odor of mice; also to that of the urine of cats. It should not be confounded with the peculiarly disgusting odor of neglected scalps affected with lice or covered with pustules and filth. The disease not infrequently coexists with other cutaneous, parasitic, and non-parasitic diseases, as, for example, seborrhœa, eczema, and tinea tonsurans.

FAVUS OF THE NAIL (FAVIC ONYCHOMYCOSIS).—Rarely one or several of the nails may be the seat of the fungus, and either the entire body of the nail or but a part of it. The lesions are maize-yellow points or macules where the substance of the organs is eroded, fissured, or split into striations—changes quite like those induced by other causes. The connections of the nail with the underlying nail-bed and nail-folds are loosened, wholly or in part, while the matrix still holds the nail firmly in position.

Etiology.—Favus is always produced by the presence and development of the vegetable organism which is named after its discoverer, the *achorion Schönleini* (Fig. 88). The disease is contagious simply because the parasite which produces it is capable of transmission from man to man, as also from animals to man, and *vice versa*. It is often conveyed to man from mice, cats, dogs, rabbits, fowls, and ponies; but when derived from the lower animals is most often transmitted from mice to cats and from cats to man. It shares with other diseases originating from vegetable parasites the peculiarity of attacking certain individuals

specially predisposed to such invasion, either by reason of physical peculiarities of organization or because of accidental and fortuitous circumstances. It is most common from infancy to the thirtieth year of life. It is less common in the United States, Austria, and England than in France, Scotland, and Poland. It is said by Bergeron¹ to be a disease of the country, while *tinea trichophytina* prevails in the cities. This statement is corroborated by general experience. Favus is more common in public than in private practice, and the larger number of clinical patients with favus come to the city from the country.

FIG. 88.



Achorion Schönleinii: a, spores; b, c, sporophores. (After CORNIL and RANVIER.)

Evidences of contagion are exhibited in those cases in which several members of the same household are affected with the disease; but in other cases the absence of a history of contagion after exposure indicates the relative difficulty experienced in propagating the contagious element in the case of favus. Thus, one individual exposed among a dozen who are diseased will fail to exhibit favus-crusts; and the latter by no means form in all situations of the same body where the fungus can be discovered by the microscope. Aubert,² indeed, presents an argument in favor of the production of the disease by traumatism, the resulting wounds, excoriations, etc., becoming by accident the seat of the disease. It is not very rarely discovered under poultices and fomentations.

Occasionally favus occurs in special localities with such development among men and the inferior animals as to constitute an epidemic. Girard³ reports thus the simultaneous existence of the disease among sixteen cows and four children in the village of Nantoin, in France. It is propagated also upon the skin of rats and mice, from which it is transmitted to man, often through the medium of the domesticated cat and dog.

Pathology.—Under the microscope the fungus is readily recognized in the root-sheaths, the bulbs, and the shafts of the hairy filaments near

¹ Étude sur la Géographie et la Prophylaxie des Teignes. Paris, 1865.

² "Rôle de Traumatism dans l'Étiologie de la Teigne faveuse," *Annal. de Derm. et de Syph.*, April, 1881.

³ *Lyon méd.*, August 18, 1880, p. 547.

the scalp. At a distance of about two inches from the bulb the parasite ceases to appear in the tissue of the hair. It is also seen upon the free surface of the skin. The favus-crust, softened by the addition of a little water or solution of potassium hydroxide, may be placed upon the slide of the microscope without other preparation for its study. The hairs may be examined in the same manner or they may be stained by the methods given for staining the ringworm fungi. Under a good one-fourth- or one-sixth-inch objective the vegetation is seen to be composed of intricate masses of mycelium and spores in great quantity.

Quincke¹ attempted to distinguish between three varieties of the favus fungus, designated respectively as α , β , and γ . Elsberg, Kral, Pick, Unna, and others have, however, arrived at different conclusions upon the same subject, some recognizing but two of Quincke's forms; others, two separate forms not corresponding with the α , β , or γ form of Quincke; and still others, corresponding with none of those previously described. The majority of observers agree that there is but one achorion fungus, displaying itself in several forms both under the microscope and clinically, all differences being due to accidental influences (varying amount of heat, moisture, and friction in the involved surface).

The threads of the fungus usually preponderate, and appear as narrow, flattened, ramifying, short or elongated, linear cells or tubes, which may be simple and empty, or be divided more or less regularly by transverse partition-walls, transforming the longer and simple into shorter and compound cells. The latter often contain in their cavities sporules clinging to either side, in which case the mycelial threads are termed *sporophores*. These sporules are the vegetative part of the cryptogamous fungus, and develop by multiple subdivision into cells, which may also themselves similarly increase in number, or by the production, at the terminal extremities of certain mycelial threads, of spores or conidia. The conidia are encapsulated or are strung like beads upon a necklace, and they appear as round, oval-shaped, angular, or very irregularly contoured bodies, often provided with partition-walls like mycelium, constituting thus compound cells. At the same time an amorphous granular matter can usually be distinguished in the mass of the fungus. The hyphæ vary in width from 0.0023 to 0.0030 mm.; and the spores from 0.0023 to 0.0052 mm.

Examination of the invaded scalp reveals, according to Unna,² the presence of the fungus at the lower border of the upper three-fourths of the root-sheaths, where chains of conidia appear among the histological elements. His view is that the cuticle of the hair offers a relative resistance to the growth of the vegetation; that the latter first penetrates the stratum corneum and the follicular orifice, and then stretches, upon the one hand, into the cortex and medulla through the cuticle of the hair; and, on the other hand, passes to the inner root-sheaths, the outer remaining always intact. In the epidermis the fungus is found chiefly between the superficial and deep portions of the

¹ Monatshft. f. prakt. Derm., 1889, Bd. viii., S. 49.

² Vierteljahr. f. Derm. u. Syph., Bd. vii., S. 170.

stratum corneum. The superior pars vascularis of the corium exhibits enlarged vessels surrounded by inflammatory elements.

When the nail is involved the parasite may be recognized in the débris produced by scraping the nail-substance; often also in the epidermis bordering the nail. The fungus exhibits here the same microscopical features as upon the scalp, though in consequence of the denser structure of the nail-substance its vegetation is usually less luxuriant.

Diagnosis.—The clinical recognition of favus is based upon the presence of the characteristic, yellowish, cup-shaped crusts, which in all typical cases are isolated, each pierced by a pilary filament and each situated in a well-marked depression of the surface of the scalp. In the disseminated form the disks of conglomerated scutella with defined and frequently festooned edges, friable, yellowish or yellowish white in color, and greatly differing as to their bulk and contour, are commonly suggestive of the nature of the disorder. In yet other irregularly formed crusts the affected area seems to be covered with a plaster-like mass irregularly distributed and of uneven thickness over an enormous patch of disease which may be practically coextensive with the entire scalp-surface. Incidentally there may be a history of contagion and a peculiar odor emanating from the scalp. The secondary effects upon the hairs, hair-follicles, and skin are also, when present, significant. White, of Boston, in an essay on the “Vegetable Parasites, and Diseases caused by their Growth upon Man,” calls attention to the stage in which the disease is likely to be mistaken for ringworm. It exists before the formation of the crust, and may be characterized by hyperæmia, vesiculation, or papulation, often unnoticed beneath the hairs of the scalp. In doubtful cases the microscope will usually establish the diagnosis, though Bodin, Morris, Sabouraud, and other observers think it is not always possible to draw a sharp line between favus and ringworm, and that cases occur in which it is impossible—with the means now at our disposal—to make a differential diagnosis with precision.¹

Aubert,² in the absence of the clinical features named above, lays stress upon an intense redness of the scalp where the hairs have been cut and the crusts removed, this color being limited to the portions attacked by the disease. The hairs also, as a result of disintegration of their elements, are infiltrated with air, and look opaque and black by transmitted light; by reflected light they appear polished and stratified, as if constituted of layers of tissue. It should not be forgotten that in exceptional cases favus-crusts coexist upon the body with other diseases of prior or of subsequent origin, as indicated. The disease should not be confounded with seborrhœa, pustular eczema, or psoriasis of the scalp, none of which exhibits the special features of a parasitic fungus.

Treatment.—The first indication in the treatment of favus is to cleanse the affected surface from all crusts and scales that may be present. For this purpose the scalp (if this be, for example, the affected part) is first shorn of its hair with scissors, and is then thor-

¹ For literature of this subject consult the references tabulated with the introductory paragraphs on Ringworm.

² *Annal. de Derm. et de Syph.*, 2e. sér., ii., p. 34.

oroughly soaked with olive-, cod-liver, or other oil, or with glycerin. After this treatment all the crusts are scraped away with a spatula, and the scalp is washed clean with hot water and soap, spirit of green soap being here preferably used. The scalp should then again be anointed with oil or be covered with an emollient poultice. Once thoroughly cleansed by repeated soakings with oil and by ablutions, it is necessary to resort either to the topical employment of parasitocides (agents capable of destroying the fungus) or to epilation (extraction of the hairs). Often both measures are required. Without further treatment the scalp, however completely freed from all evidences of the disease, will not fail to show fresh favus-crusts in a fortnight or somewhat longer time.

Epilation is practised with the aid of epilating-forceps. These forceps should be constructed with an easy spring that will not tire the fingers of the operator; with blades that are sufficiently broad to grasp a few hairs at once; and with smooth or but slightly serrated faces of the blades, as otherwise the hair is liable to fracture in the grasp of the instrument. The surface to be operated upon should previously be anointed with vaselin or with olive-oil, and the hairs entirely be removed, a sufficient number, covering a definite space, upon successive days.

The tediousness of this process has led to several devices by which it is sought to do away with its necessity. Originally the "calotte" was employed for the removal of the hairs; it was made by smearing a disk of leather with pitch, and applying it over the scalp. When the calotte was subsequently removed by a brisk twitch with the hand the hairs which adhered were forcibly uprooted *en masse*; those remaining being adherent in their sacs in consequence of the fact that they had not been invaded by the fungus. As a substitute for this procedure, Bulkley¹ employed adhesive masses or sticks, which can be melted and be made to adhere at once to large numbers of the hairs. When cold they can be withdrawn from the surface with the hairs attached. These sticks are from two to three inches in length, and from one-fourth to three-fourths of an inch in diameter. The hair is first clipped so as to be about one-eighth of an inch in length. The end of the stick is then heated in an alcoholic flame, and quickly placed upon the scalp. It is thus left in place until cold, and is removed by bending it over and drawing upon the hairs successively with slight rotation. When free it is found thickly set with the extracted filaments, which may be burned off in the alcohol flame, thus destroying both the hairs and any adherent fungous masses. The stick is then carefully wiped clean with paper, after which it is again ready for use. The formula for the mass of which these sticks are composed is as follows:

R	Ceræ flavæ,	℥iij;	12	M.
	Laccæ in tubulis,	℥iv;	16	
	Resinæ,	℥vj;	24	
	Picis Burgundicæ,	℥xj;	44	
	Gummi dammar.,	℥jss;	45	

¹ "Favus and its Treatment by a New Method of Depilation," Arch. of Derm., April, 1881, vii., No. 2.

The parasiticides in greatest favor are : corrosive sublimate in solution in the strength of from 1 to 4 grains (0.066–0.266) to the ounce (30.) ; formalin (1 to 4 per cent.) ; sodium hyposulphite in saturated solution ; pure or diluted sulphurous acid ; spirit of green soap ; chrysarobin, pyrogallol, tar, croton-oil ; boric, carbolic, and salicylic acids ; petroleum, chloroform, ether, creosote, and oil of cloves. The addition of acetic acid to liquid applications, or washing the surface with vinegar immediately before applying the parasiticide, favors penetration of the remedy. Ointments are also useful containing mercury (citric ointment, yellow sulphate, or white precipitate), naphthol, benzol, thymol, sulphur, pyrogallol, salicylic and carbolic acids. Chrysarobin is effective in an ointment, though objectionable on account of the staining of the scalp, and, almost inevitably, of the face also. Lenzberg¹ generates sulphur-fumes in a dish of red-hot coals attached to a frame (made of wood or of pasteboard) close to the head of the patient. By means of a paper cap the fumes are collected and retained (from five to ten minutes) in contact with the patient's hair. During ten years' trial of this plan he has never been compelled to resort to epilation.

One or more of the methods may be needed, either at the same time or by repetition or alternation, until the fungus is entirely destroyed, the requisite period usually extending over three months. Treatment should then be discontinued in order to test the result by observation. If, in the course of a fortnight or more, a relapse occurs, treatment is to be promptly renewed. Upon the non-hairy portions of the body parasiticides thoroughly applied usually insure radical relief. When the nail is involved, it should be cut short and carefully scraped or be softened by repeated applications of a strongly alkaline lotion, after which a parasiticide may be employed in ointment or lotion.

In general, it may be remarked that patients long affected with rebellious favus may need a roborant course of treatment and nutritious diet. Cleanliness here, as in all the parasitic disorders, is important. As adjuvants in the treatment of the scalp and nails it is well to remember that continuous applications of a parasiticide are aided by caps or cots of impermeable material superimposed upon rags saturated with the medicament employed. For use in this manner, and especially for the nails, Sabouraud recommends a solution containing 1 gramme of iodine and 2 grammes of potassium iodide in a litre of distilled water.²

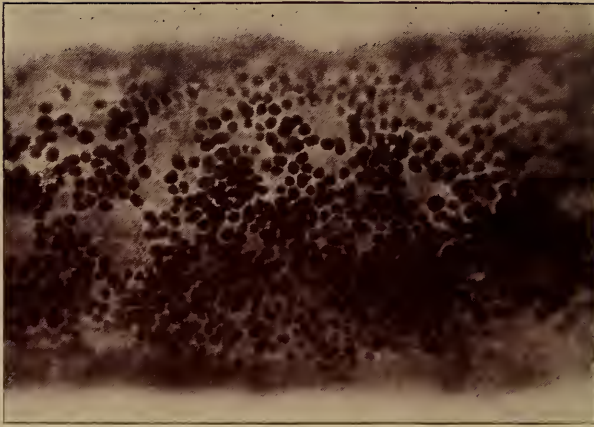
Prognosis.—The prognosis is generally favorable to the ultimate termination of the disease in all cases ; for even the most rebellious and untreated forms are relieved when the hair-follicles atrophy. Upon the non-hairy portions of the body the disorder is rarely severe if promptly and efficiently treated. Upon the scalp the prognosis is proportioned to the extent, severity, and period of prior invasion of the disease. Early and vigorous treatment of the scalp in healthy children is usually followed by satisfactory results. In long-neglected subjects of the disorder the result may be a remediless and characteristic bald-

¹ Der prakt. Arzt., February, 1881.

² See paragraphs at the close of the chapter on Ringworm.

PLATE XXIV.

Fig. 1.



Portion of a Hair showing the *Microsporon Audouini*.
(From a photo-micrograph.)

Fig. 2.



Portion of a Hair invaded by the *Trichophyton*,
Endo-Ectothrix. x 500.

a, a—Chains of spores in focus. *b*—A chain situated further within the hair, and hence not in focus.
(From a photo-micrograph.)

ness, the affected surface being provided with scanty wisps of stunted and uncolored hairs. Neglect, filth, and systemic malnutrition are the most unfavorable elements in any case.

TINEA TRICHOPHYTINA.

(Gr. *θρίξ*, hair ; *φυτόν*, a vegetation.)

(RINGWORM.)

Ringworm is a disease of the hairs and hair-follicles of the scalp and the beard, as also of the non-hairy portions of the body. In each case it is produced by the presence of a vegetable fungus. Until recently all forms of ringworm, both of the hairy and non-hairy portions of the body, were supposed to be produced by a single fungus, the trichophyton. In 1891 Furthmann and Neebe first advanced the idea that there were two or more fungi responsible for the various manifestations of the disease. Within the last few years a number of investigators, headed by Sabouraud, in a series of researches, have more definitely settled the etiological value of these fungi.¹ There are at least two distinct and unrelated forms capable of producing the appearances classed as ringworm: the MICROSPORON AUDOUINI, or small-spored fungus, and the TRICHOPHYTON, or large-spored fungus. Of the latter, several varieties are recognized. The microsporon appears under the microscope chiefly in the form of a large number of round spores, irregularly grouped or massed about the follicular portion of the hair. Mycelial threads, large and branching, are also seen, chiefly within the hair. The sheath of spores surrounding the hair is often continued upward about the latter for one-sixteenth or one-eighth of an inch above its exit from the follicle, and in this situation can be recognized by the unaided eye as a whitish or grayish coating of the hair.

The mycelial threads of the microsporon are all within the hair proper, and after repeatedly dividing and subdividing they terminate on the outer surface of the shaft in fine filaments, at the extremities of which are the spores, which in this fungus are external. In France the microsporon is responsible for about 60 per cent. of all cases of ringworm of the scalp in children. The fungus is not found in ringworm of the beard or of the body except in the form of small, irregularly outlined, slightly reddened, and furfuraceous patches, occurring on the face and neck in children having ringworm of the scalp; occasionally on the skin of adults who come in contact with such children.

¹ Sabouraud: *Les Trichophyties humaines*, with Atlas. Paris, 1894. *Diagnostic et traitement de la pelade et des teignes de l'enfant*. Paris, 1895. Adamson: *Brit. Jour. of Derm.*, July, Aug., and Dec., 1895. Morris: *Practitioner*, Aug., 1895. Ringworm and the Trichophyton. London, 1896. Fox and Blaxall: *Brit. Jour. of Derm.*, July, Aug., Sept., and Oct., 1896. *Transactions of Third International Congress of Dermatology*, London, Aug. 4 to 8, 1896. Papers by Sabouraud, Rosenbach, and Morris. Rosenbach: "Ueber die tieferen eiternden Schimmelerkrankungen der Haut." Wiesbaden, 1894. Leslie Roberts: *Brit. Therap. Jour.*, Sept. 29, 1894. *Jour. Path. and Bact.*, Aug., 1895. This observer classifies the fungi according to their ability to digest horny tissues. M. Fadyen: *Jour. Path. and Bact.*, April, 1895. Jamieson: *Brit. Med. Jour.*, Aug. 20, 1893. Bodin: *Des Teignes tondantes du cheval et leur inoculations humaines*. Paris, 1896. Mibelli: *Annal. de Derm. et de Syph.*, 1895, p. 733. Charles J. White: *Jour. Cutan. and Gen.-Urin. Dis.*, Jan., 1899.

Such lesions of the skin do not at all resemble ordinary ringworm, as their outlines are irregular and ill defined, and they rarely persist for more than a few days at a time. In France the microsporon is rarely, if ever, found in kerion.

The trichophyton is composed of spores which vary greatly in size, but which, as a rule, are considerably larger than those of the microsporon. They are frequently cuboidal, oval, or irregularly rounded; but their chief characteristic lies in the arrangement in lines or chains extending up and down the hair-shaft. The mycelium is found without but never within the hairs. The trichophyton occurs in three varieties: the endothrix, in which the spores occur wholly within; the ectothrix, in which the spores are distributed wholly without; and the endo-ectothrix, in which the spores are partly within and partly without the hair. The endothrix, like the microsporon, is found only in ringworm of the scalp of children, though it also may produce transient, inconspicuous, irregular, furfuraceous, and slightly reddened patches on the face and neck of children affected with this form of ringworm. On the scalp the endothrix produces lesions which are often distinctly different from those caused by the microsporon. These differences are noted in the clinical description of tinea tonsurans. The ectothrix and the endo-ectothrix apparently are derived either directly or indirectly from the domestic animals, and are responsible for ringworm of the body, of the beard, and of all suppurating forms of the disease. By means of culture-experiments a number of subvarieties of the trichophyton are differentiated, many of which, however, are not generally accepted. These varied appearances are looked upon by some as the result largely or wholly of differences in the media and circumstances of cultivation. It is well known that slight modifications of the culture-media produce marked changes in the character of a fungus-growth.

In London, Morris, Fox, Adamson, and others find that the microsporon is responsible for more than 90 per cent. of all cases of ringworm of the scalp in children, and that it also occurs in some cases of ringworm of the body, and even in some of the suppurating forms of the disease, as kerion. The trichophyton is comparatively rare in London. On the other hand, Mibelli states that the microsporon is almost unknown in some parts of Italy, and it would seem to be equally rare in some portions of Germany. In Boston Dr. Charles J. White found the microsporon in 139 out of 279 cases of ringworm examined. The different varieties of these fungi seem to have a definite geographical distribution.

To prepare a hair for examination, it may be placed between a slide and cover-glass in a solution of potassium hydroxide. Sabouraud uses a 25 to 40 per cent. solution, which is admirable for rapid work, but which quickly disintegrates the hair. Adamson employs a 5 or 10 per cent. solution, which clears the hair slowly in the course of one or several hours. By making frequent examinations of the specimen the observer can arrest the destructive action of the solution at any stage desired, and thus better preserve the relative position of the fungus to the hair. Many attempts have been made to stain the fungi, which

unfortunately show an affinity for the same stains as does the cortical layer of the hair. A satisfactory method has been devised by Morris and his laboratory assistant, Calhoun. It is a modification of the Gram and Weigert stain for bacilli, and gives good results. The hair is first washed with ether to remove fatty debris; it is then put for one or two minutes in the Gram iodine solution, and after drying is stained for from one to five minutes in gentian-violet and anilin-water. It is again dried and treated for a minute or two with the iodine solution, and for an equal length of time in anilin-oil containing pure iodine, after which it is cleared with anilin-oil, washed in xylol, and mounted in Canada balsam. Coarse, dark hairs and spores within the hairs require more time for staining than do fine, light-colored hairs and the fungus-elements situated without the hair.

While microscopical examination will often suffice to distinguish the microsporon from the trichophyton, or even for recognition of some of the varieties of the latter, the finer—and often disputed—points of difference can be appreciated only by means of culture-experiments, the details of which require fuller description than can here be given.

Recent studies of the ringworm fungus, though interesting from an etiological standpoint, have added little knowledge of practical value in treatment of the disease, nor have they furnished a basis for a new and scientific classification of the different forms of ringworm.

As the several regions of the body, when invaded by the parasite, display lesions which are more or less peculiar to itself, it is usual to consider each separately. Ringworm of the body is, therefore, designated *TINEA CIRCINATA*; of the scalp, *TINEA TONSURANS*; of the beard, *TINEA SYCOSIS*.

Tinea Circinata.

(*HERPES TONSURANS*, RINGWORM OF THE BODY. *Ger.*, SCHEERENDE FLECHTE; *Fr.*, HERPÈS CIRCINÉ, TRICOPHYTIE.)

Symptoms.—Ringworm of the body displays different symptoms according to the temperature in which the vegetation flourishes and the various external irritants to which the skin where it has once been implanted is subjected.

The macular form of the disease is characterized by the occurrence of one or of several pea- to large coin-sized, circumscribed, reddish circles, usually paling under pressure, often at the general level of the integument, occasionally slightly raised above it, forming then a flattened disk. The centre of the circle may be paler, or indeed to the naked eye be unaffected, transforming the patch to an annular lesion, from which circumstance it originally received the name "ringworm." It develops within certain limits, rarely exceeding five or six inches in diameter, by peripheral extension; and is usually characterized at the outer border by slight, whitish, furfuraceous desquamation. This form of lesion is usually seen upon exposed surfaces of the body where there is less heat, moisture, and friction than upon other parts, as, for exam-

ple, the forehead and neck in moderate atmospheric temperatures. From it may be developed the other forms described below. The disease may recur within the peripheral border; in this way occasionally two, three, or more concentric rings or parallel bands of crescentic outline may be visible in a single patch of disease. Frequently a tendency to a peculiar formation, often that of concentric circles, is found in every patch existing at the same time in a given case. It is possible that the various types are produced by different species of the fungus. The subjective sensations are a trifling degree of itching or of burning. Should these rings extend to the beard or the scalp, the circinate may coexist with the other varieties of the disease.

The vesicular lesions of ringworm appear as such at the onset, or they rise from the macular lesions described above. In the former case pin-point-sized, transitory, and superficial vesicles or vesicopapules spring from a central point or focus, or speedily shrivel until they are represented merely by minute, whitish, branny scales. To these lesions others succeed, always at the periphery, and to these again yet others, the rosy or the reddened base on which they rest being sometimes slightly in advance toward the outlying skin. The enlarging circlets of disease proceed in their course to an evolution similar to that observed in the macular forms. The difference, due to a more active development of the fungus, is noted not merely in the type of the lesion, but also in the slightly exaggerated pruritic sensations that are awakened. Rarely, both of the forms described are presented with acute symptoms and extensive development, in multiple patches spreading over the face, neck, trunk, and extremities, accompanied by a slight febrile movement and moderate tumefaction of the affected surfaces. As a rule, the eruption is trifling, and may, indeed, be limited to a single ring, or to a few circlets about the neck, terminating in the branny desquamation described; but in the severer forms the evolution of the disease may persist for months and crusts form, the fall of which leaves annular pigmentations of temporary duration.

The papular and rare pustular forms of the disease observe the same peculiarities with respect to the clearing of the centre, the annular appearance of the advancing area of involvement, and the production finally of scales and crusts. They represent, however, either a much more luxuriant vegetation of the fungus, or the irritation of the affected part by friction and heat, or, what is probable, the coöperation of the two. They are, hence, most commonly observed upon the back, the belly, the intermammary and inframammary regions, and the inner faces of the thighs and arms, in which localities they occasionally occur with chronic manifestations. The papules are light- or dull-red-dish, pinhead-sized and larger, solid elevations, roundish, oval-shaped, irregular, or confluent, forming eventually bean- to coin-sized, raised disks with a pale, exfoliating, or actively inflamed centre, the so-called NUMMULAR ERYTHEMA, or DISCOID TRICHOPHYTIC ERYTHEMA of French authors. Some of the cases of CONGLOMERATE or AGMINATE FOLLICULITIS are due to the trichophyton. The itching in these forms is sometimes severe; and the process may display central recrudescence,

as noted above. Pustules found at the periphery have the size and distribution of the other lesions described. They represent merely an aggravated exudative process awakened by the fungus and the scratching incident to the pruritic sensations excited.

ECZEMA MARGINATUM, TINEA TRICHOPHYTINA CRURIS.—Partly because of the controversy which the subject aroused, special attention was once directed to this variant of the disease which Hebra was first to describe. It is most marked upon those portions of the body which come in contact with the saddle when a rider is mounted on a horse—that is, the perineum and the inner faces of the thighs, the region marked by the reinforcing patch in the trousers of the cavalryman. The disease, as encountered here, occurs in both sexes. It is characterized by extensive exudation in bright or lurid patches, with a very distinctly defined, raised border, showing a sharp contrast with the healthy skin beyond, from which peculiarity it has its name. It may extend laterally over the groins upward over the pubes, and backward over the sacrum, being generally defined at the periphery by a crescentic outline. The centre may be paler and less involved, or actively irritated, while the periphery still extends in one or more annular festoons down the inner side of the thigh or upward over the regions indicated. The itching is severe; the course of the disease is obstinate, persistent, and subject in a remarkable degree to relapse in the same locality. The fungus is always present, whether occurring as a cause or an epiphenomenon of the disorder. The disease was rightly named by Hebra, and it deserves special recognition under whatever title it may be classified. It is a true eczema, with special features, complicated by the development of the trichophyton, and, as is now well known, often by other representatives of the “dermatological flora.” It is aggravated by heat, the moisture of sweat, and the friction of apposed surfaces of the skin in contact with each other and the clothing. After detecting the fungus in scales scraped from the surfaces thus involved, one is always in such cases impressed with the characteristic clinical peculiarities of the disease. It is usually of symmetrical distribution, due to the circumstances of its development, and in this respect differs from the other manifestations of the disease. The condition may occur in milder or even severe forms in the axilla or about the breasts of women or about the umbilicus. In such cases it is indistinguishable clinically from a disorder described by Vidal under the title **CIRCINATE AND MARGINATE PITYRIASIS** (pityriasis circiné et marginé), which he regards as due to the *microsporon anomœon*, or *dispar*.

TINEA TRICHOPHYTINA UNGUIUM (ONYCHOMYCOSIS).—When the nails are affected they become friable, opaque, and lamellated; and are clinically indistinguishable from nails secondarily changed in favus, eczema, psoriasis, and similar disorders of the integument. One or several of the nails of both the feet and hands may be involved. When all the nails of both extremities are invaded the disease is rarely of parasitic origin. The microscope is requisite for establishing the diagnosis in the latter case, the parasite being detected in the fragments procured by scraping the nail.

Etiology.—*Tinea circinata* is caused by the presence of the parasite, though the parasitic invasion may be an accident of other cutaneous disorders. The *TRICHOPHYTON* was first discovered in 1844 by Gruby; though Malmsten, whose name is often associated with that of the fungus, became identified with its recognition by his observations during the succeeding year. As a contagious disease it ranks higher in the scale than favus, being much more readily communicated, and, as a result, much more common. Occurring upon the non-hairy portions of the body, it is often spontaneously removed by the desquamative process which it excites in the skin.

Though the fungus is the essential cause of the disease, its development is greatly favored or retarded by external influences. Attention has already been called to its luxuriance under the influence of heat and moisture. It is, therefore, much more severe and rebellious to treatment in tropical countries. It occasionally occurs in epidemic forms. Thus, Gerlier¹ gives the details of such an epidemic in Ferney Voltaire, where twenty-six cases of the disease came under his observation. In some of these instances the lesions were pustular, in other tuberculo-pustular. Aggravated forms of the disease often originate in the lower animals, the severest and most rebellious types being derived usually from the horse. *Tinea circinata* occurs much more frequently in children than in adults, presumably from the relatively tender condition of the epidermis in these subjects. It is particularly liable to occur in men whose skins are especially moistened, as in those who work in atmospheres saturated with steam. Several members of a single household will often display ringworm of the body at the same time, having transmitted it the one to the other. The need of an appropriate soil for the germination of the fungus is shown by the fact that some individuals are predisposed to its invasion. It is, however, encountered in both sexes and in all social conditions.

Pathology.—The seat of the fungus in *tinea circinata* is between the strata of the epidermis, more particularly in the lower layers of the stratum corneum and in the superior layers of the rete. Here the trichophyton can be recognized with the microscope, at an early stage of the disease, in the form of spores only; in the course of a few weeks exhibiting characteristic mycelium. The latter is much more scantily developed than in favus; much less branched and articular; and the threads more slender. Like the elements in favus, however, these are jointed and divided into compound cells by partition-walls. The spores are also often strung like beads on a necklace. The former measure 0.0018 to 0.0026 mm.; and the latter, 0.0021 to 0.0035 mm. (Duhring).

After the fungus has found its way to the surface of the skin favorable to its development it penetrates the layers of the epidermis in every direction from the central point of invasion, the circle thus produced being characteristic of many forms in both the higher and the lower vegetable life. The irritation excited by the presence of this foreign body produces all the subsequent symptoms of a mild grade of

¹ Lyon méd., April 24, 1881, p. 590, and May 2, p. 7.

superficially seated inflammation : erythema, exudation, minute vesicles, papules, and, in severe grades, tubercles and pustules. The desquamative symptoms represent, in a sense, the natural effort at relief; this effort, as noted above, being often successful when the spores and sporophores are thrown off with the effete, horny plates of the epidermis. When the nails are affected the fungus can be discovered in detritus of the nail-tissue which has been macerated in dilute liquor potassæ. Sabouraud states that only the different species of trichophyton, ectothrix pure, or endo-ectothrix, are found in ringworm of the glabrous skin and of the nails, though the trichophyton endothrix and the microsporon Audouini may be found occasionally in small, irregular, transient, reddened, slightly furfuraceous areas occurring on the face, neck, and other parts of the body during the course of ringworm of the scalp.

FIG. 89.



Epidermis invaded by trichophyton : *a*, inferior portion of the stratum corneum ; *b*, superior portion of the rete. Both exhibit long mycelial threads, with a few ramifications and a small number of spores. (KAPSI.)

Diagnosis.—Ringworm of the body is to be distinguished, clinically, from eczema, psoriasis, seborrhœa, lupus erythematosus, herpes iris, and syphilis. All the varieties of eczema are noted for their greater degree of itching and infiltration, their much less defined border, coarser scales, decided absence of a circular contour and of a history of contagion. Psoriasis does occur in circular and annular patches, often with a clear centre and insignificant, subjective sensations ; but its scales are lustrous and the tissue beneath them readily bleeds, showing deeper implication of the skin. The disease is often symmetrical in disposition ; occurs by preference upon certain regions of the body where ringworm is relatively infrequent ; and its history is that of a chronic disorder. Seborrhœa of the skin exhibits greasy or fatty crusts, which are never characterized by the peculiarly branny scales seen in

ringworm of the body. (The distinction between these disorders on the scalp is given under *Tinea tonsurans*.) *Lupus erythematosus* is often symmetrical, generally chronic, and is characterized by the development of multiple annular patches, enlarging centrifugally from a clearing centre. *Herpes iris* can be distinguished, first, by its predilection for the extremities; second, by the color-variegations which it displays and which are never seen in ringworm of the hands. Syphilis is multiform in its lesions, usually preceded by a history of infection; and its distinctly circular patches, enlarging at the periphery, all exhibit either atrophic, ulcerative, or distinctly crusted lesions which suffice for diagnostic purposes.

Pityriasis rosea is not characterized by vesicles; is often symmetrical in development; occurs in oval rather than in distinctly circular patches; and exhibits a characteristic tawny-yellowish shade of color not seen in ringworm. In *eczema marginatum* the elevated border and infiltration of the diseased surface, its situation (groins, armpits, pubes, etc.), its curved outlines, and the occurrence of fresh rings within the older, point to the nature of the trouble, which is practically a coexistence of ringworm and dermatitis.

But the microscopical discovery of the parasite is the chief, and, indeed, the essential, method of diagnosis in *tinea circinata*. With a good fourth- or fifth-inch objective the spores and mycelium are readily recognized in the scales scraped from the affected surface and moistened with dilute liquor potassæ. Care should be had in distinguishing the fungous elements from cotton- or wool-fibres, fat-globules derived from previously applied unguents for the cure of the disease, sebum, pus, and the nuclei of epithelia. All confusion of this sort can be avoided by a careful study of the anatomical peculiarities of the trichophyton, recalling especially the parallelism seen in the double contours of the threads, their jointed appearance, their contained granules, and the necklace-like or beaded arrangement of many spores.

Treatment.—The indications in the treatment of ringworm of the body are the removal of the superficial layers of the epidermis, by which means the spores and mycelium are thrown off from the surface; and, if possible, the simultaneous destruction of the latter. Upon the delicate skins of infants and children the simpler remedies are first to be employed. Scrubbing each patch with spirit of green soap, or merely soap and water, will often suffice for its obliteration. The topical application of tincture of iodine is a common and usually an effective remedy. The same may be said of dilute acetic, boric, and carbolic acids, or of a 1 or 2 per cent. solution of formalin. A solution of acetic acid used with or immediately before other parasitocides is said to favor penetration of the latter. Morris's solution of thymol,¹ $\frac{1}{2}$ drachm to 2 drachms (2.–8.) of chloroform and 6 drachms (24.) of olive-oil, is equally available. One may also use thymol in ointments, $\frac{1}{2}$ drachm (2.) to the ounce (30.) of simple unguent, with good effect. A 1 to 2 per cent. solution of formalin is often effective. Of the mercurials, ammoniated mercury, 1 scruple (1.33) to the ounce (30.) of ointment; corrosive sublimate, 1 to 2 grains (0.066–0.133) to the ounce (30.) of solution; and

¹ Lancet, 1881, pp. 164 and 241.

the ointment of mercuric nitrate, 1 drachm (4.) to the ounce (30.) of vaselin, are valuable. Sulphurous acid, from a freshly opened can, and saturated solutions of sodium hyposulphite are as effective as any of the parasiticides, and are often used with advantage as lotions, to be followed by an appropriate unguent, always providing against chemical decomposition of the ingredients of the latter. Sulphur- and tar-containing lotions and unguents are useful in more obstinate cases.

Chrysarobin and pyrogallol, in ointment, from 5 to 10 grains (0.33–0.66) to the ounce (30.), are brilliantly effective in all these cases, subject, however, to the disadvantage incidental to the staining and irritative effects they produce. They should be used with caution upon the skins of children, and always tentatively at the onset. In cases of ringworm of the face of male adults, close to the beard or the scalp, one may employ these remedies with a view to insure non-invasion of the pilary follicles by the fungus, the prompt destruction of which may become then a matter of urgency. Wilkinson's ointment recommended by Kaposi is also useful in the treatment of aggravated forms of ringworm of the body, but it should be restricted to such forms. For other and more urgent reasons potassium hydroxide solutions should be reserved for exceedingly intractable cases. Sometimes a combination of several of the simpler remedies named above may be serviceable, as in the following formulæ:

R	Lac. sulphur.,	3ijss;	10	
	Sapon. virid. spts., }		24	
	Lavandul. tr., }	āā 3vj;		
	Glycerin.,	3ss;	2	M.
			[Kaposi.]	

R	Iodin. pur.,	3ij;	60	
	Ol. picis [sp. gr. 0.853],	3j;	30	M.
	Mix with care, gradually.			

R	Creasoti,	℥xx;	1 33	
	Ol. cadini,	f 3ij;	12	
	Sulphuris præcip.,	f 3ij;	12	
	Potass. bicarb.,	3j;	4	
	Adipis,	3j;	30	M.
			[Van Harlingen.]	

To be used in obstinate ringworm of adults.

R. W. Taylor applies mercuric chloride, 4 grains to the ounce (0.26–30.) in tincture of myrrh. Perry, of California, uses the bichloride in one-half the strength last named, dissolved in sulphuric ether. Foulis, of Edinburgh, recommends iodine dissolved in oil of turpentine or benzin, the fluids named penetrating with greater ease than others to the deeper portions of the skin.

Other articles advised are oleates of mercury and copper, croton-oil, glacial acetic acid, cantharidal collodion, petroleum, and pyroligneous acid (Thomas).

The thorough application of the remedy selected for use, upon the integument freed from scales by scrubbing with soap and water, is a matter of importance. When a solution of sodium hyposulphite

is employed, the previous application of vinegar and water by sponging renders the agent more effective, for evident chemical reasons. Over-treated skins, or those to which too strong a parasiticide has been applied, require subsequent relief of the induced irritation by the simpler bland dressings. The inert dusting-powders, even when not thus indicated, are often useful when there is distinct vesiculation; and in simple cases they may be the sole remedies required, as then the disease is self-limited in duration.

The internal treatment of patients affected with ringworm, by means of tonics and roborant measures, may be demanded by the systemic condition, but it has no recognized influence over the disease itself.

When the nails are involved, they should be thoroughly scraped and then kept moist by wearing the rubber cots sold for the use of sportsmen, fishermen, and others. In this way a partial maceration of the nail-substance is secured, and the action of any one of the parasiticides named above is greatly aided. One of the solutions most useful in the treatment of the nails is that recommended by Sabouraud, containing 1 gramme of iodine and 2 grammes of potassium iodide in a litre of distilled water.

Prognosis.—The disease is often self-limited, and is generally under the simplest treatment satisfactorily relieved. Eczema marginatum, especially in the crural region, may be obstinate, because it is an eczema as well as a parasitic disease, and, therefore, subject to the relapsed and chronic phases of the first-named disorder. Other intractable forms of the malady do, however, occasionally occur in adults, usually in tropical climates and tropical temperatures.

Tinea Tonsurans.

(RINGWORM OF THE SCALP, HERPES TONSURANS, TINEA TONDENS.
Ger., SCHEERENDE FLECHTE; *Fr.*, TEIGNE TONDANTE.)

Ringworm of the scalp is a disease chiefly of children, and occurs most frequently among those congregated in public institutions. The gregarious habits of children and the frequency and intimate character of contacts in their amusements and studies greatly increase the chances of contagion when one of their number is affected with ringworm of the scalp. As a consequence, the early recognition and relief of the disease furnish problems among the most imperious presented to the general practitioner as well as to the dermatologist. Important considerations relating to the segregation and education of children are wrapped up with the question of treatment. Nor should the physician, examining and giving advice about the scalp of a number of children, forget that his hands may transmit the disease to those as yet unaffected.

Symptoms.—The differences to be particularly noted between ringworm of the body and ringworm of the scalp depend largely upon the fact that in the latter the fungus makes its way to the hair-follicles and there finds the nutriment for its multiplication and development. The symptoms usually first observed are circumscribed, small coin-sized,

roundish patches upon the scalp, wholly or partly covered with minute, whitish, slate-colored, grayish, or dirty-yellowish scales. Sometimes the formation of the scales can be observed as they develop upon a hyperæmic and reddened area. Still more rarely, pin-point-sized, transitory vesicles or pustules precede. The hairs upon such a patch seem irregularly clipped short near the surface or, as it is frequently styled, "nibbled" off, thus producing the effect of partial baldness in the involved area. Among them may often be found lustreless, dry, long and fragile hairs, which break upon slight traction or flexion. The patches may increase in number and spread individually in area until, in the course of weeks or months, the entire scalp is invaded. In the older patches young and downy hairs may here and there be seen, pushing up the stumps left by those that have fallen. One or more of various phases of the disease may be presented in its subsequent evolution. Thus, a single patch may extend to the size of that of a large coin or of the palm, and the disease be throughout limited to that area. Again, as set forth above, almost the entire scalp may be covered with relatively small or enlarging patches, or, even without the occurrence of any distinct patch, isolated hairs or tufts of hairs here and there over the entire scalp may exhibit evidence of impairment. The hairs, instead of "starting" from the patch, may be twisted, imbricated, or matted, and be covered with grayish scales. The disease may be acute or be chronic in its course. Instead of assuming the dry and squamous type described, acute and exudative symptoms may develop, in which event the rare vesicular and pustular lesions are succeeded by the exudation of a gummy secretion and the formation of crusts. Lastly, there may be produced the variety known as "kerion," which is described below.

Pruritus, in various grades of severity, though usually mild, is induced by the disease; and often the patches are altered in appearance by the traumatisms produced by the finger-nails and the comb. When the scalp is very generally invaded by the squamous form of the disorder its appearance is very similar to that noted in diffuse seborrhœa, chronic eczema, and psoriasis of the scalp, except that the hairs are less pasted to the surface; are more lustreless, friable, and contorted in shape; and much more often are represented by stubble or stumps. The disease may occur coincidently with ringworm of the body, and indeed at times there may be detected a ring, half of which on the neck presents the typical aspect of *tinea circinata*, and the other half involving the scalp exhibits the features here described.

Stowers,¹ Sangster,² as also Hutchinson, Tay, Hillier, Baker, and others, have recorded cases in which the disease coexisted with alopecia areata. Geber asserts that after exfoliation of patches of ringworm the scalp may, in cases, become absolutely bald, smooth, and glossy. This condition may exist from the beginning in the *BALD TINEA TONSURANS* of Liveing, which is often mistaken for alopecia areata, an error readily corrected by the recognition of scaling patches with hairs exhibiting under the microscope evidences of the existence of the fungus. It is to be remembered that in all such persistent scaling patches left after

¹ Lancet, 1881, p. 326.

² Ibid., 1880, p. 303.

treated or untreated ringworm of the scalp the possibility of contagion is not averted.

The DISSEMINATED RINGWORM of Alder Smith affects isolated hairs or small groups of hairs scattered over the scalp, a broken stump, or a group, or a relatively small number, of lustreless, dry, and friable hairs furnishing the only evidence of the disease.

Ringworm produced by the microsporon Audouini can often be distinguished clinically from that produced by the trichophyton. In the former the patches are single or few in number, are rounded or oval in outline, may be of considerable size, are usually slightly reddened and furfuraceous, and are more or less covered with hairs which are lustreless, dirty looking, broken off at irregular distances from the surface, and easily epilated between the thumb and finger in considerable numbers. Moreover, in this form a grayish or whitish sheath (composed of spores) is seen encircling each hair and extending from one to three millimetres above its exit from the follicle. In patches of ringworm produced by the trichophyton, according to these observers, the patches are much more numerous, but are very small and irregular in outline, and instead of being covered by hairs and broken stumps of hairs, usually show a number of black dots at the mouths of the follicles caused by the breaking of the hair at or beneath the surface of the skin. In this latter form of ringworm the scalp itself is usually normal or nearly so, scaling not being usual; and, instead of forming patches, the disease may affect isolated hairs or small groups of hairs. The disseminated ringworm and the bald tinea tonsurans mentioned above are probably produced by the trichophyton, and not by the small-spored fungus. It is undoubtedly true that the clinical differences mentioned above can be noted in some cases, and the diagnosis made at once from a simple inspection of the affected areas. In the majority of cases, however, the clinical features are not sharply marked, and the diagnosis must rest upon microscopical examination, or even upon culture-experiments.

Lastly, it is to be noted that in tinea tonsurans at times the efforts of nature are successful in obtaining spontaneous relief. With the defluvium capillitii and exfoliating epidermal plates the fungus may finally be removed; the resulting alopecia be followed by a growth of healthy pilary filaments; and, even though years be required for this long process, in the end no trace of the disease be discernible.

Etiology.—Ringworm of the scalp is produced by the fungus recognized in the etiology of tinea circinata, the trichophyton, or by the microsporon Audouini.¹ Ringworm is frequently observed in children of both sexes, especially in those gathered together in schools and public charities, where it may spread very generally from one to another, and require months and years for its extermination. It is a highly contagious disease, but yet requires unquestionably a suitable soil for its development. White² calls attention to the fact that when there is ringworm on the face of an adult, even of rebellious form, in the course of which the beard may extensively be affected, the scalp is usually spared. Ringworm in the scalp of the adult and the aged is,

¹ See introductory paragraphs on Ringworm.

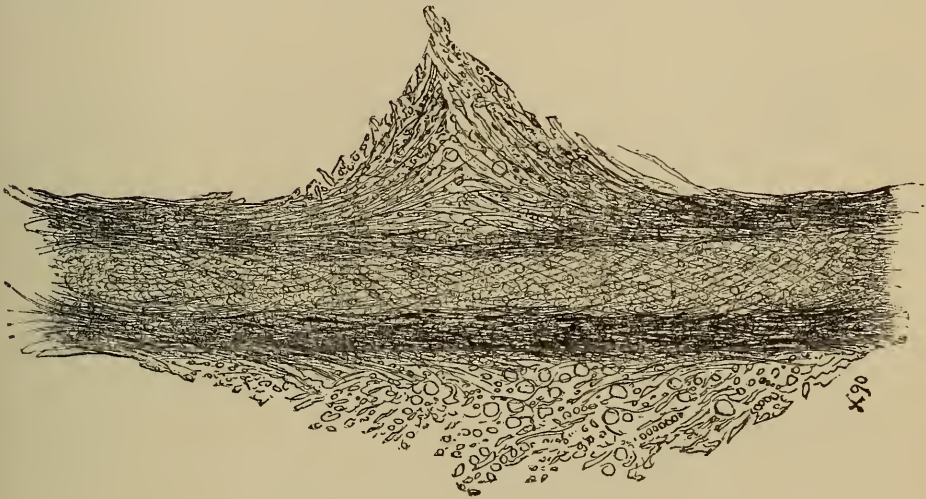
² Loc. cit.

indeed, among the rarest of cutaneous accidents. Among the methods of transmission in children are the use upon the head of the unaffected of brushes, combs, wearing-apparel, sponges, towels, etc., which have been employed upon persons exhibiting ringworm of the body or the head. It must be remembered that *tinea circinata* may transmit *tinea tonsurans*; and it is by tracing the course of the two forms of the disease that the sources of contagion can be ascertained in any series of cases. The disease is one rather prevailing in cities than in the country; in this respect it differs from favus.

Pathology.—The disease is produced in consequence of invasion of the scalp and follicles, bulbs, and shafts of the hair by the fungus already described.

Under the microscope the hairs are seen to be greatly altered in advanced cases (Fig. 90). The bulbs are distorted, misshapen,

FIG. 90.



Hair invaded by the trichophyton.

or withered, and often stuffed with spores which greatly predominate over the mycelium. At times the base of the bulb will show a brush-like expansion, and in this respect resembles the free ends of the stumps of the hairs above, which have a jagged, bristle-like appearance, from division of the shaft into many filaments between which spores in abundance are visible. The shaft is often longitudinally split where the parasitic growth has mechanically forced apart its elements, and its cuticle may be peeled off or curled above and below away from the axis, with spores protruding at such points. Conidia can be discovered much further upward along the hair and distant from the scalp than in favus; often, indeed, upon its free surface. Occasionally a few mycelial threads may be recognized, either longitudinally or transversely arranged as regards the axis. It is probable, however, that the relative preponderance of spores and mycelium in these filaments is determined by the stadium of the disease in any given case. In the earlier stages of the affection the elongated threads may be discovered in larger quantity, and, as they interfere less with the integrity of the fibrous tissue, the hair usually at these times may be extracted

from its follicle without fracture. Later, the threads disappear and the conidia are infiltrated throughout every portion of the shaft, which then breaks often upon the slightest traction. One unaccustomed to microscopical examinations with a view to the detection of the parasite should be careful not to mistake for these threads the delicate lines which traverse the surface of the shaft exposed to the objective, and which represent the edges of the cuticle of the hair. In doubtful cases the hair should be examined in liquor potassæ and after staining by the methods given in the first pages devoted to the subject of ringworm. The scales found upon the affected scalp also exhibit traces of the parasite under the microscope, though to a less extent than the invaded hairs. In exceptional cases, however, the epidermis of the scalp seems to suffer as much as that of the non-hairy portions of the body.

As to the mode of invasion, it is still disputed whether the spores find access to the fundus of the follicle between the shaft and the follicular wall, or by penetrating the cuticle of the hair-shaft at the level of the epidermis. It is possible that invasion may occur in both ways.

Diagnosis.—The recognition of a typical patch of ringworm of the head is simple. The branny scales, clumps of hairs, and distinct contour of the invaded area are always in the highest degree suspicious symptoms. It has been stated, however, that the general development of tinea tonsurans over the scalp produces a condition very like that seen in other diseases. In this case the microscope must be employed for a decision as to the nature of the process. The whole vertex has been unnecessarily epilated in seborrhœa sicca when no parasite could be found; but in seborrhœa there is usually a symmetry of involvement which even aggravated cases of ringworm of the head fail to assume; and even though pasted down, atrophied, changed in color, and loosened in their follicles, the hairs are rarely broken off near the scalp in seborrhœa. In seborrhœa, psoriasis, and squamous eczema of the scalp there is, moreover, no history of contagion; the scales are in each disease different in color and character; and the hairs in the two affections last named are firmly fixed in their follicles, and only in severe cases present nutritional changes. The diseases, moreover, are usually chronic in their course. In any doubtful case, apart from microscopical evidence, thorough removal of all scales from the scalp by shampooing with green soap and hot water will reveal the nature of the disease present.

Alopecia areata, as has been noted above, may coexist with ringworm, but it is pathologically distinct from it. The patches in the first-named disease are uniformly smooth, and the hair falls from them *en masse* without scaling or other traces of previous involvement of the regions affected. Blackish points or dots may, however, be distributed over the areas which characterize this form of alopecia, and which certainly constitute suspicious symptoms in any case. In this event one may at times be able to pick out with a fine needle this blackish point from the patent follicular orifice, and find it to be a particle of dust accidentally lodged in the depression. It is not, as in comedo, free pigment that has found its way to the surface; nor, as in ringworm, is

it the stump of a hair on a level with the surface of the scalp. In favus the cup-shaped crust will sooner or later betray the character of the disease to the naked eye.

Confirmatory evidence as to the nature of the disease will often be furnished by a careful search for the source from which it was derived ; and for obvious reasons this should always be attempted. Ringworm of the body occurring upon the individual patient affected with *tinea tonsurans*, or upon other members of the same household, and suspicious "mangy" patches upon horses, dogs, cats, rabbits, white mice, or other animals with which the child may have been in contact, should always receive attention.

Treatment.—The indication for the relief of the disease is the destruction of the parasite ; and there can be no question that this may be accomplished in some cases without having recourse to epilation. The parasitocides named in connection with ringworm of the body, if thoroughly applied in simple cases, after clipping or shaving the hair and efficient scrubbing of the patch with spirit of green soap and water, will occasionally be followed by permanent relief. Prominent among these parasitocides may be named formalin (1 to 5 per cent. in aqueous solution), pyroligneous acid, sulphurous, acetic, salicylic, and boric acids, saturated solutions of sodium hyposulphite, acetum cantharidis, tincture of iodine ; Crocker's ointment containing thymol, 1 part to 4 ; Morris's solution of thymol in chloroform and olive-oil (see *Tinea circinata*) ; and ointments of boric acid and sulphur, of each 1 drachm (4.) to the ounce (30.) of vaselin, and chrysarobin, the action of the latter being carefully limited to the patch of disease by the aid of a skull-cap.

Epilation, however, is a valuable, and often an essential, method of treating the disease, and it may be practised as recommended when considering the treatment of favus. The scalp in each case should first be oiled, and be cleansed by the soap-shampoo, and after the epilation is performed an appropriate parasiticide should be employed. The calotte, made by spreading pitch-plaster upon leather or muslin, is a clumsy substitute for epilation in order to remove the hairs, but the sticks recommended by Bulkley may be employed, the formula for the preparation of which has already been given. In each case the epilation should remove a zone of sound hairs encircling the diseased patch, that the encroachments of the fungus may in every possible way be limited. It should not be forgotten, however, in the treatment of *tinea tonsurans* by both epilation and parasitocides that in chronic cases these methods in the hands of the most expert have failed for consecutive months to relieve radically the disease ; that even the most inveterate cases, in the course of time and as adult years are reached, are spontaneously relieved without permanent alopecia ; and that no remedy or procedure is ever justifiable which is capable of either producing follicular atrophy or an effect worse than that wrought by the disease itself.

Coster's paste is popular among English practitioners, including Stowers, Fox, Liveing, and others. It contains 2 drachms (8.) of iodine in crystals, dissolved in oil of tar ; and is painted over the part at intervals of a few days. It is most useful in circumscribed

patches of the disease. Among other remedies employed, some of which have been described in connection with ringworm of the body, may be named mercuric chloride, ammonio-chloride, red oxide, oleate, and ointment of mercuric nitrate; epispastics; pure carbolic acid and carbolated glycerin; sulphur, chloroform, ether, tar in ointment, and Wilkinson salve.

To be effectual the treatment pursued must be persistent and thorough, and always be accompanied by frequent washings and soapings of the affected part.

The induction of suppuration in the hair-follicles (or a species of artificial kerion), by the aid of electrolysis and croton-oil liniment, has been praised by Alder Smith and Wyndham Cottle, of London, and later, in a modified form, by Magee Finny, of Dublin. By the process of Finny, 100 parts of the oil are mixed with 50 each of cocoa-butter and white wax. Sticks are made of this compound which can thoroughly be rubbed into the part affected. By both methods it is claimed that no pain is produced, nor is permanent alopecia the result. A solution of salicylic acid is applied after each treatment, and a subsequent poultice may also be needed. In these cases the parasite is destroyed presumably by the suppuration excited. As in the case of ringworm of the body, *tinea tonsurans* is not remediable by internal treatment. Such internal medication, however, may be indicated by the systemic condition of young patients, and should be in each instance such as that condition suggests.¹

Prognosis.—The prognosis in every judiciously treated case of *tinea tonsurans* is favorable, since all patients ultimately recover from the disease *per se*. Under the best treatment many cases prove extraordinarily tedious, month after month passing without marked improvement. The disease, however, in a large proportion of cases among children surrounded by proper hygienic conditions, especially as regards cleanliness, is readily relieved.

TINEA KERION (KERION CELSI, from *κηρίον*, a honey-comb).—The occurrence of active and usually circumscribed inflammation in a portion of the scalp affected with ringworm is at times followed by certain peculiar features. This complication of ringworm was recognized early in the history of medicine by Celsus, whose name has since been associated with its lesions. Tilbury Fox, in 1866, was first to recognize its identity with *tinea tonsurans*; and it has since been the subject of a number of papers by Tanturri, Maiocchi, Schilling, Barduzzi, Auspitz, and Wilson. In the United States Atkinson² has made it the subject of a memoir.

The symptoms are the occurrence of acute inflammation, usually circumscribed, though occasionally diffuse, in a portion of the scalp, where a tumor forms which may project a considerable height above the general level. In time the appearance presented is suggestive of anthrax benigna, since from the tumid orifices of numerous distended follicles a viscid, semitransparent, puriform fluid exudes. The latter

¹ See also paragraphs on page 758.

² Arch. of Derm., January, 1881, vol. vii., No. 1.

is characteristic. The hairs loosen and fall. When the view of the lesion is not obscured by the pilary growth it appears as a flattened hen's-egg- to turkey's-egg-sized, boggy, semiglobular tumor, its surface congested, reddened, glazed, and often exhibiting other evidences of inflammation, with split-pea-sized, pustule-like lesions distributed over its surface, or, when these have ruptured, exhibiting the gaping apertures described above, from which a gummy secretion is poured in varying quantities. Modification of this condition occurs, such as the production of a true subcutaneous abscess with fistulous sinuses. The sensations awakened are usually painful; the course of the disease is chronic. It may begin with the usual symptoms of ringworm of the head, though often there is no history of the latter. The complication is a rare one.

The parasite may and may not be found in patches of kerion, according to the acuity of the present or the precedent inflammatory process. If the latter be of high grade, and suppuration result, the fungus is destroyed, a result the attainment of which has been attempted in the production of "artificial kerion" by means of croton-oil for the relief of tinea tonsurans. In the earlier stages represented by deep-seated follicular inflammation, with pustulation of the hair-shafts, the latter may be seen microscopically to be invaded with spores.

The treatment is either by the milder parasiticides or by the methods proper for the relief of ordinary phlegmonous inflammation of the scalp, according to the stage of the kerion. The pus-cocci present in some of these cases require boric-acid lotions and bichloride washes.

Tinea Sycosis; Hyphogenous Sycosis.

(TINEA BARBÆ, SYCOSIS PARASITICA, MENTAGRA PARASITICA, RINGWORM OF THE BEARD, "BARBERS' ITCH." *Ger.*, PARASITÄRE BARTFINNE; *Fr.*, TRICHOPHYTIE SYCOSIQUE.)

Symptoms.—The disease is best studied at its onset in the beard of a blonde subject with relatively fine, downy hairs, where are presented the typical features of tinea circinata, ringworm of the body. One or several, reddish, pea- to small-coin-sized rings become visible, with pinpoint-sized vesicles, branny scales, and often, indeed, no other lesion save a hyperæmic, scarcely elevated margin at the periphery. The hairs over the patch may be fragile, and clusters of pilary filaments here and there betray evidences of change. With proper treatment the disorder may not progress beyond this point.

In some cases the very slight degree of itching awakened by the process just described may be intensified, and large plaques form, a portion of which may extend from the region of the beard over the face and neck, or *vice versâ*. When fully developed a phlegmonous disorder is produced which bears some analogy to the kerion just described, and which may so actively progress that it is first seen in typical development. The skin is congested and reddened, with sub-epidermic (or débris of ruptured) pustules at the orifice of the pilary follicles, and is studded irregularly with firm, pea- to nut-sized papules

and tubercles. The tubercles are usually aggregated in masses or lumps which involve the skin and subcutaneous tissue, and they are firm, often tender and painful, rarely boggy and furuncular. When pierced they give exit to a characteristic, muciform, gluey, yellowish, and sticky fluid, puriform yet differing from pure pus, that rapidly dries into crusts. These composite lesions are usually circumscribed in a given area of involvement, very rarely covering the region of the beard in symmetrical disposition, more often limited to one cheek or to the cheek and chin.

The hairs in the invaded region are involved as in ringworm of the scalp. These filaments break near the surface of the integument, leaving ragged stumps; or they spontaneously fall after being loosened in their follicles. The ease with which they may be epilated is one of the most characteristic features of the disease; they are slipped out of their follicles as readily as if they had been oiled; or, as Anderson writes, "as easily as a pin can be pulled out of a pin-cushion." They are then often whitish because enveloped in the fungus producing the disease. In either event the resulting gradual thinning or removal of the hairs renders the disease of the surface more conspicuous and deforming. At the edge of a patch thus exposed, deformed, lustreless, contorted, flattened, twisted, or split hairs may be found. Occasionally the features of the patch are changed in consequence of the unusual degree of suppuration excited. In this case the pustules burst and their contents concrete into dry crusts about the stumps of shafts of surviving hairs, from which circumstance the disease has received its name (*sycosis*, *σῦχον*, a fig). Rarely, a conglomerate crust covers the entire region with an excoriated, inflamed, and secreting surface beneath.

Formidable cases of *tinea sycosis* have occurred in the persons of farmers, where the disease was long untreated and unrecognized. Some severe types of the disease have been produced after shearing sheep having diseased pelts. In these cases the cheeks, lips, and chin are the seat of nut- to fist-sized and larger cutaneous and subcutaneous, soft, boggy, and pus-filled tumors, accompanied by excessive soreness of the entire throat and neck, the hair falling from the follicles in large masses, and as if lubricated to facilitate their escape.

Etiology.—The disease is always produced by the *trichophyton*.¹ White, of Boston, has called special attention to the frequency of its origin in the barber-shop, a fact which common experience verifies. It is usually the irregular visitor to these establishments who is first to supply the germs of the disease. No individual proprietorship in cup, soap, brushes, and razor can secure against the danger of infection the person whose razor is drawn over a common strop, whose cheek is handled by unwashed fingers which have recently been passed over an infected face, or whose beard is combed, brushed, or rubbed with the implements and towels in common use at these establishments. The remedy is twofold: first, the full beard should be worn without shaving, as it is rare to find bearded patients of this class affected with *tinea sycosis*; second, where the whole or any part of the beard is to be removed every adult male should shave himself. The physician

¹ See introductory paragraph on Ringworm.

should, in this connection, for medico-legal reasons be upon his guard against hastily deciding both as to the nature of the disease of his patient and the source from which it was derived. Of the first, he can become certain by his microscopical investigations; of the second, he can only be sure by obtaining possession of facts far beyond the reach of the average practitioner. A medical gentleman once sent for examination some hairs from the beard of a male patient affected with tinea sycosis. Before receiving a report confirming the diagnosis this physician was sued by the barber in whose establishment the disease had been probably acquired, on the ground of libel.

It is difficult to determine the frequency of the disease from statistics. The affection is certainly relatively rare, yet more common than is often supposed to be the case. It is of somewhat irregular occurrence, months often passing without a case coming under observation, after which several may be noted in rapid succession.

FIG. 91.



Filaments and spores of the trichophyton from the beard of a patient affected with tinea sycosis.

The disease, being contagious, is one affecting men in all stations of life, and these usually at a period rather under than over the fortieth year. More men with light hair and eyes, and light-brown, reddish, or sandy beard are affected than those having darker shades of hair and eyes. Morris has called attention to the fact that tinea tonsurans¹ occurs more frequently in blonde than in brunette subjects.

Pathology.—The disease is essentially a follicular and perifollicular inflammation induced by the irritative effects of the fungus, precisely as in the case of tinea tonsurans. The difference between the clinical aspects of the two diseases may be explained in part by the habitual covering of the scalp with caps and hats while the face is left exposed; and by the occurrence of tinea sycosis in adult years, while tinea ton-

¹ Lancet, 1881, pp. 164 and 241.

surans is predominantly a disease of childhood. As a result of the induced inflammation, vesicles, pustules, papules, and tubercles are formed, while the perifollicular inflammation may invade all portions of the skin and subcutaneous tissues, gluing together the plastic nodules formed about the individual hair-sacs into the lumpy masses characteristic of the disease. The invasion of the hair-follicles and hairs by the fungus is accomplished as in the case of ringworm of the scalp. Under the microscope spores and mycelium are visible, the forms preponderating at the time when the disease first comes under observation, but probably preceded in most cases by abundance of thread-like forms. The identity of the disease with some forms of ringworm of the body and scalp does not, however, rest merely upon microscopical observation, but is demonstrable by established clinical facts. Not only may ringworm be seen to spread from the face to the beard, but *tinea tonsurans* and *tinea circinata* may also transmit *tinea sycosis*, and the reverse. A physician had ringworm of the bearded chin and cheek derived from the face of a child under his care. He subsequently gave *tinea circinata* to his wife, who suffered on the face and shoulder, and she, in turn, communicated *tinea tonsurans* to her daughter.¹

Diagnosis.—The distinction between coccogenous and hyphogenous sycosis is of chief importance in this connection; and, necessarily, the microscope must be employed to settle the question definitely. The diseases, however, differ in their clinical features. The coccogenous form always fails to exhibit the nodules, tubercles, and composite cutaneous and subcutaneous agglutinations of the disease produced by the fungus. The process in the former is more superficial, and it exhibits to the eye a more vivid redness as a result of the cutaneous hyperæmia. Owing to the same cause, the frequent pus-containing lesions are developed and elevated above the general level of the integument; they are less commonly subepidermic crypts filled with characteristic mucoid puriform contents. The region of the bearded upper lip, so often involved in cases of nasal catarrh, is often spared by the trichophyton. When this parasite is present the hairs are characteristically loosened, distorted, and otherwise changed. This condition is not seen in the coccogenous disease; exception, however, in this particular is to be noted in some long-standing cases of the latter. When the affection has persisted for many years (and one may often see patients thus affected) the thinned and starved condition of the pilary growth is a striking symptom, the scanty lustreless hairs often scarcely sufficing to conceal the deforming redness and pustulation of the surface from which they spring. The diffuse symmetrical affection of the hairy face, extending over both cheeks and chin, is more frequently connected with the presence of pus-cocci. Lastly, the hyphogenous, as a rule, is less painful and tender than the other form of sycosis, and, furthermore, is, without question of rarer occurrence.

With respect to syphilis, it is to be noted that the papular or the pustular syphiloderm developed in the region of the beard is, almost without exception, to be discovered in other parts of the body, especially the scalp. Ringworm of the scalp and the beard existing at the

¹ See introductory paragraphs on Ringworm.

same time in one individual is rare. In syphilis there is usually an offensive odor to the abundant crusts; shallow ulcers are also prone to form beneath the pustules; and there is often a history of infection or a hint of the nature of the disease in its polymorphic character.

Eczema of the bearded region may extend to or from other portions of the face, as in a case in which it sweeps from the ear above. The presence of a stalactitic crust depending from the lobe of the ear of an affected side would at once furnish a clue to the nature of the disease in the beard. In eczema the interfollicular region is invaded, not deeply, as in tinea, but superficially, as in coccogenous sycosis. The itching is severe; the hairs are not involved; the infiltration is diffuse; the outline is indeterminate; and a halo of redness spreads from the affected part to the non-hairy surface in the vicinity.

Treatment.—The treatment of tinea sycosis is generally conducted as in tinea tonsurans. It is customary to begin by anointing the affected surface with an oily or fatty substance, and to follow this with a shampoo of soap and warm water for the removal of crusts, after which shaving and epilation are practised on alternate days; and parasitocides employed locally. For softening the crusts the spray of an atomizer may be used.

Epilation of the male beard is often essential for removal of the disease, but the results of the treatment suggested below in the end may be satisfactory.

The patient for two successive days keeps the affected part macerated with almond- or olive-oil. On the evening of the third day the shampoo with soap is employed, and the skin is washed free from crusts and scales. The part is then cleanly shaved. This operation is at first painful, but gradually becomes less distressing. After shaving, the affected surface is bathed for ten minutes with borated water as hot as can be tolerated, by which means the inflammatory condition of the perifollicular tissues is, in a brief time, considerably reduced. While the bathing is in progress all subepidermic pustules or points where a mucoid fluid is coming to the surface are opened with a fine aseptic needle. A solution of sodium hyposulphite is then sponged freely over the affected surface for several minutes and allowed to dry; this solution may contain 1 drachm (4.) to the ounce (30.), or even more. After a thorough and final washing with hot water the tender skin is carefully dried and gently smeared with a sulphur ointment containing 1 to 2 drachms of sulphur (4.–8.) to the ounce (30.) of vaselin, often with the addition of from $\frac{1}{4}$ to $\frac{1}{2}$ (0.016–0.033) grain of mercuric sulphide. The patient then retires to bed. In the morning the unguent is washed off with soap and water, the sodium-solution is reapplied, and a borated or a salicylated powder is thoroughly dusted and kept over the part during the day. In the evening the shaving may be repeated or not, according to the vigor with which the beard is reproduced, but on the second day shaving is imperative. As soon as the pustulation ceases and the tubercles have manifestly diminished in size the ointment at night is superseded by the use, at that time also, of the dusting-powder. Whether the shaving is practised nightly or on alternate nights, ablution with very hot water and with solution

of sodium hyposulphite is continued nightly until the inflammation excited by the fungus is practically limited to the follicles that are invaded. The dusting-powder is to be thoroughly and constantly employed after the ointment is discontinued. With care and patience these measures may save many patients the annoyance of epilation; and they should be continued for several weeks after apparent relief of the disease.

The treatment may be varied to suit the needs of individual cases. Kaposi highly recommends, for example, 1 per cent. solutions of corrosive sublimate locally; and the other parasitocides considered heretofore in connection with the treatment of ringworm may serve also a good purpose. In some cases an ointment of thymol may be used with manifest advantage; in others, a substitute may be found in Morris's solution of the same in chloroform and oil (the formula for this has already been given). In still other cases spirit of green soap with sulphur, finely powdered sulphur, boric, acetic, and carbolic acids, or other topical applications of recognized value may be employed.

When resort is had to epilation, and this is essential in all severe cases, the hairs should be thoroughly removed from their follicles over every lumpy nodule, and even over every suspicious patch covered with scales. A zone should be cleared about each such papule. The results are prompt and in the highest degree satisfactory.

Prognosis.—This disease is always remedied sooner or later, though it is at times tedious in its progress and characterized by relapses.

Precautions to be Observed in the General Management of Tinea Favosa and Tinea Trichophytina.—The physician consulted in the case of a patient affected with either of the diseases thus far considered as resulting from the presence of a vegetable parasite should bear in mind that they are the most contagious of their class. He may not only himself suffer from the disease which he is attempting to relieve in another, but may also convey it to others, or be consulted by others of his patient's family actually infected during the course of the treatment pursued.

Generally, it may be said that the hands of the physician should carefully be washed after each manipulation of the part, and preferably with a weak disinfecting solution. In the case of children the lining of all caps, hoods, and other coverings of the head should be removed and destroyed by burning; and fresh linings made of tissue-paper renewed daily; while paper-caps of the same or of similar material should be worn when indoors. Brushes, combs, towels, and articles of clothing should never be used in common by two or more individuals. When practicable, infected individuals should occupy separate beds; and the bed-covering, clothing, toilet-apparatus, and dressing or other materials which have been in contact with a diseased surface should be immersed in boiling water before they are again employed for any use in common. Thin recommends covering every diseased patch, after the treatment appropriate to itself, with an adhesive and impermeable dressing, for the sake, not of the patient, but of those with whom the latter may be brought in contact; and the suggestion is both wise and

practicable. A man infected with ringworm of the beard in a barber-shop which he has visited but once, will often, when directed by his physician to shave, resort to some other establishment, where he is well known, and where he has more confidence in the cleanliness of the operators. In this way he often thoughtlessly spreads the disease of which he is the victim. It is well to send patients who cannot shave themselves to a particular barber, who, being instructed in the manner of shaving so as to insure immunity, generally fails to spread the disease in any case.

TINEA IMBRICATA.

(TOKELAU RINGWORM, BURMESE RINGWORM, BOWDITCH-ISLAND RINGWORM, LAFA TOKELAU, LA PETA, CASCADEE, GUNE, HERPES DESQUAMANS. *Fr.*, HERPÈS TONSURANS DESQUAMATIF.)

This disorder was first described in 1844 by Fox, and has since been studied by Turner, Manson, MacGregor, and Roux. One of the best clinical descriptions is given by Crocker.

Symptoms.—The disease is first declared, after artificial inoculation, by a period of delay (“incubation”) lasting about nine days, after which minute reddish points appear, arranged for the most part in semicircles, the former rapidly developing into papules producing an intolerable pruritus. The growth thenceforward is reported to be at the rate of from five to ten millimetres each week. In a brief time lamellæ of epidermis are detached, their free border being directed to the centre of the circular disk, the patch or patches when fully developed being represented by concentric rings, about five millimetres apart, suggesting a resemblance to “watered silk.” The scales may be as large square as half a centimetre, with curling edges which later become horny and much darker in color. It is said that the hand passed over such patches from the circumference to the centre recognizes a smoothness of the surface, but when the motion is reversed, from centre to periphery, the scales are raised and resist the fingers. The appearance of the older patches suggests a skin covered with clay. The process of production of the concentric rings is reported to be, first, by the elevation of a central point of the epidermis and the formation there by the fungus of a brownish mass; then by separation of the epidermis at the central point, with persistence for a time of attachments at the border; then by liberation of the attached edge by friction or otherwise; and finally by exposure of the corium. Just beyond this line a brownish rim declares the line of advance of the fungus beneath the epidermis. When the ring thus formed has attained a diameter of about five millimetres, a brown point again appears centrally, and there is a repetition of the process originally observed in the primary ring.

All portions of the body may be affected; but the scalp and face seem usually to be spared; when the hairy parts (scalp, pubes, axillæ) are involved the disease spares the follicles, and its management is thus declared to be correspondingly facile. Though the hairs them-

selves are not invaded, they are said to fall when the disease extends over the hairy regions of the body. When the disease spontaneously disappears from any portion of the integument there are left persistent, deep-colored rings or circles where the scaling originally occurred.

Etiology.—The disease is always produced by contagion; it occurs at all ages and in both sexes, especially in children; and is chiefly encountered in tropical climates.

Pathology.—According to Königer (who was not a dermatologist) and Manson, the disease is produced by a special fungus, the *tinea imbricata*, which invades the epidermis without involving the hair-follicles, its oval or rectangular spores being more numerous than the mycelium, while the threads are long, straight, or gently curved. It is not yet determined that this parasite is not a development of the trichophyton peculiar to certain tropical regions; but Manson's statement, that inoculation of the same individual with both *tinea imbricata* and *tinea trichophytina* produces each disease separately, seems tolerably conclusive on this point.

The **Diagnosis** from "Giant Ringworm," "Boatman's Ringworm," "Dhabie's Itch," "Majee's Dad"—forms of trichophyton as it occurs in luxuriant vegetation upon the smooth portions of the body in tropical countries—is readily made. In these forms of ringworm the central area clears, while in *tinea imbricata* the central part of the patch is made up of concentric rings.

Treatment.—The scales are readily removed with soap and water or by alkaline baths, and chrysarobin, pyrogallol, or iodine ointment is well rubbed into the part. In some cases strong lotions are employed of the same chemical constitution.

The **Prognosis** is favorable.

TINEA VERSICOLOR.

(PITYRIASIS VERSICOLOR, DERMATOMYCOSIS FURFURACEA, MYCOSIS MICROSPORINA, CHLOASMA. Ger., KLEINENFLECHTE.)

Symptoms.—The eruption in this disorder occurs in the form of few or of many, irregular, roundish, circumscribed or reticulated macules, pinhead- to small-coin-sized, rarely occupying an area the size of the palm or larger. In color it varies from the most delicate buff or fawn shade to a reddish, deep-brown, and even blackish hue. The surface of each lesion, when closely inspected, is usually seen to be covered with furfuraceous scales. If the scales are not visible, slight erosion with the finger-nail or the curette will demonstrate the fact that the superficial layers of the stratum corneum are, in the site of each lesion, readily separable from the tissues beneath. The eruption is most common upon the anterior surface of the thorax; but it is also displayed upon the neck, the dorsum, the abdomen, and the other regions of the trunk, and the flexor aspects of the upper extremities (the hands only excepted). It is rarely seen upon the lower extremities; still more rarely on the face; never on the hands and feet. The eruption is either unproductive of sensation or is accompanied by a mild pruritus. Patients usually declare that after profuse sweating,

bathing in warm water, or brisk friction of the surface minute epidermal rolls separate from the affected area. The disease may linger for years upon the surface of the body.. It has a special tendency in susceptible individuals to recur after removal.

The eruption is occasionally encountered in extreme development. In a young married woman who had been the subject of the disease for many years the entire trunk, the axillæ, the groins, the upper portion of the thighs, the neck to the level of the high collar worn, and the upper extremities to the wrists, were encased in a uniform sheet or cuirass of chocolate-tinted epidermis in a condition of exfoliation in finger-nail-sized lamellated flakes. Even in these extreme cases the tendency of the disease to avoid surfaces exposed to the light is distinctly manifested. Unna¹ describes an anomalous feature of the disease, in which the maculations occur in annular form with a clearing centre. Rarely, also, a very few irregularly distributed macules may be seen as the sole evidences of the existence of the parasite. Thus, a patient may exhibit a small-coin-sized patch on the surface of the chest, another on the shoulder, and possibly a third over the deltoid region of one arm. These are generally cases partially relieved of a more diffuse eruption. More commonly the slightest manifestation of the malady is an irregular, vertically arranged, somewhat narrow band of lesions immediately over the sternum, and visible beneath the hairs of that region in the adult male, or upon the intermammary sulcus of women. The face, hands, palms, soles, hairs, hair-follicles, and nails are usually exempt.

Etiology.—The disease is produced by a vegetable mould, discovered in 1846 by Eichstedt, to which Robin gave the name *Microsporon furfur*. In capabilities for contagion it is far inferior to the vegetable parasites already described, and it illustrates well a point to which attention already has been directed, viz., that these fungi flourish only in soils suitable for their germination and fructification. Members of one family are said to communicate the disease occasionally, the one to the other; and Lancereaux² reports that in this way he accidentally infected himself from scales collected for examination from a patient in hospital, and afterward unwittingly transmitted the affection to his wife. The disease occurs in both sexes, rarely before puberty and after middle life, and in persons of every social condition, irrespective of personal cleanliness. It is exceedingly common, more so, indeed, than statistics are capable of demonstrating, inasmuch as hundreds who are annually annoyed by it never seek professional advice. In physical examinations made with a view to the enlistment of men for military service, as also of government pensioners, the disease is often recognized upon the persons of those who pay no attention to its presence. Being concealed by the clothing and unproductive of much discomfort, many subjects of tinea versicolor endure its presence with complacency.

By some it has been supposed that the fungus selects the chest of the phthisical as its habitat, a supposition doubtless based upon the

¹ Vierteljahr. f. Derm. u. Syph., 1880, Nos. 2 and 3.

² Traité d'Anatomie pathol., xi., p. 265. Paris, 1875.

fact that tuberculous men and women, more than all others, expose the chest to the view of medical men in order to permit of its auscultation and percussion.

Pathology.—The MICROSPORON FURFUR (Fig. 92) is readily recognized with the aid of the microscope, as it exists in luxurious profusion upon every affected surface. The scales may be scraped from the skin, and at once be examined, when innumerable clustered spores and short threads become visible; the former highly refractive and resembling in their circular and oval contours droplets of oil. Their aggregation in clusters is distinctive of this among the other forms of cryptogamic vegetation. They measure 0.0023 to 0.0084 mm., while the hyphæ vary in diameter from 0.0015 to 0.0038 mm. (Duhring). Among the latter, sporophores are distinguishable, with contained conidia and

FIG. 92.



Microsporon furfur. (After KAPOSI.)

terminal elements emerging at one extremity or the other of the spore-case. Both elements are more readily stained by eosin and methylviolet than those of the trichophyton or of favus.

One of the strongest arguments against the claim for the identity of all the vegetable parasites is furnished by the history of this interesting mould. It never by any possibility invades the hairs or the hair-follicles, though it may be seen flourishing at the orifice of a follicular duct, and even beneath a vigorous pilary growth upon the chest of a male subject. It avoids light and air; and singularly refuses to encroach even upon certain covered portions of the body, preferring, in its extreme development, to linger unobtrusively at the neck near the verge of the collar.

Diagnosis.—In this disease, as in all parasitic affections of vege-

table origin, the microscope may be required to decide the diagnosis in any case in which doubt arises. In its simpler manifestations the recognition of the affection is readily assured. The location of the eruption, its irregular reticulations, its characteristic yellowish or fawn-tinted shades of color due to the nature of the fungus, and the exfoliation of the epidermis which it excites by its superficial penetration of the outer layer of the stratum corneum, producing thus a mealy, branny, flaky, or roll-like exuvium, are all significant. None of the chloasmata due to pigment-changes in the skin, however much they may resemble tinea versicolor in color, share with it this peculiarity of desquamation. Chloasma may involve, moreover, the face; tinea versicolor almost never. Vitiligo occurs upon the scalp; tinea versicolor very rarely. The macular syphiloderm may be mistaken for the disease under consideration, but, when developed to such an extent as to rival tinea versicolor in its diffuseness, the syphiloderm will creep out over the face, the hands, and the feet, and will be accompanied by adenopathy, alopecia, mucous patches, palatine hyperæmia, or will furnish evidence of a polymorphic tendency. Often, indeed, with such an eruption, the survival of the initial sclerosis will at once betray the nature of the disease. These are important considerations, since in the mere matter of subjective sensation, color, shape, and size of lesion there may be marked resemblance between the two. Patients exhibiting the lesions of tinea versicolor may suffer from syphilis; and many having the former disease, in consequence of a suspicious exposure believe they are infected with lues, and yet indeed are not. These incidents serve to illustrate the importance of making an accurate diagnosis in every case of cutaneous disease.

The most common error committed in this connection, however, is based upon the fancied resemblance in color between the patches of tinea versicolor and either the liver itself or the color-changes which disease of that viscus is capable of producing in the skin. The existence of "liver-colored" spots in the skin is, hence, erroneously attributed to hepatic disease. Few patients consult physicians for relief of this disorder who have not a belief in the internal origin of the disease.

Treatment.—A single method of relieving tinea versicolor is recommended for the simple reason that it invariably is successful. It requires merely vigorous and intelligent coöperation on the part of the patient. A hot bath is taken, if possible, for three nights in succession, and when the surface is well macerated in hot water the affected skin is scrubbed either with the cheap yellow soap of the shops, or with *sapo viridis* in substance or in tincture. When the disease is extensively developed this process is aided by friction with a flesh-brush or with a coarse towel. The skin is then washed clean with a surplus of hot water, and dried, after which the affected patch is first moistened with vinegar and water, or dilute acetic acid, and afterward well sponged with a solution of sodium hyposulphite, 1 drachm (4.) to the ounce (30.) being usually sufficient. As a rule, the greater part of the eruption is removed with the third application. If there be recrudescence in isolated patches, as is often the case, or outlying areas which have withstood the parasiticide employed, they

should subsequently be attacked with a solution of mercuric chloride, 1 to 2 grains (0.066–0.133) to the ounce (30.). Other measures, however, are popular with physicians, and among them may be named the topical use of boric, carbolic, or sulphurous acid; tincture of iodine; sulphur in bath, ointment, or lotion; calomel in ointment; the alkalies in bath or lotion; potassium sulphide in bath; chrysarobin, pyrogallol, tar, Wilkinson's salve, and the other parasitocides employed in the treatment of ringworm of the body. The inner clothing should not be worn after treatment until it has been immersed in boiling water.

The following formula is also recommended :

R	Hydrarg. chlorid. corros.,	℥j;	1 33
	Saponis viridis,	℥ij;	60
	Spts. vin. rectific.,	℥iv;	120
	Ol. lavandul.,	f ℥j;	4 M.
			[Anderson.]

Prognosis.—The disease can readily be relieved by simple treatment. Relapses often occur, and require to be radically treated. Untreated, the disease may continue for years without the slightest impairment of the general health. It is probable that when untreated the parasite undergoes spontaneous exfoliation in advanced years, a period when presumably the fungus fails to find in the epidermis the nutriment upon which it thrives.

ERYTHRASMA.

(Gr. *ἐρυθρός*, red.)

Burckhardt first described this disorder in 1869, but it received its name in 1862 from von Bärensprung. It has since been studied and described by Balzer, Riehl, Koebner, Pick, and others.

Symptoms.—The disease first appears in punctiform to palm-sized, roundish, definitely circumscribed maculations, presenting a sharp contrast in color with that of the adjacent integument. This hue varies somewhat according to the location of the patches. The younger lesions may exhibit a vivid redness over the entire macules or over their borders only. The older lesions exhibit a yellowish or a brownish tinge. These colors are compounds of ordinary erythematous redness and yellowish or brownish discoloration of the horny layer of the epidermis.

The macules are circular or rosette-shaped, or they display very irregular outlines. They are not raised to any extent above the general level of the skin, though the finger passed over the surface can recognize a slight elevation of the border, due to hyperæmia, and subsequent moderate, flour-like furfuraceous desquamation, most conspicuous also at the periphery. Vesiculation and papulation do not occur. The colors recognized in different patches may be light reddish-brown, pale reddish-yellow, and light or dark orange.

The eruption is most commonly encountered where apposed surfaces of the skin come in contact, as in the axillæ, the groins, the cleft of the anus, and the regions where the scrotum touches the thigh; it occurs, however, in typical expression on both sides of the chest. The eruption spreads slowly and in serpiginous outline until the affected

surfaces are completely invaded. It is much more chronic in its course than the other dermato-mycoses, lasting for months and years without apparent change.

Etiology.—Erythrasma is produced by the growth, in the superficial layers of the epidermis, of the fungus described below. Men are much more often affected than women; children not at all. The youngest patient whose case is recorded was sixteen years old; the oldest, fifty-five.

Pathology.—The fungus termed *MICROSPORON MINUTISSIMUM* (Fig. 93), to which the disease is attributed, is chiefly remarkable for the extraordinary delicacy and fineness of its threads and its very minute spores. The threads are either simple cylindrical bodies of variable size, or they may exhibit partition-septa; they may divide dichotomously,

FIG. 93.



Microsporon minutissimum, from patches of erythrasma.

and may terminate in hooked or knobbed expansions. They are inextricably interwoven when occurring in large masses. The largest transverse diameter is 0.6μ ; in length the mycelium presents the greatest variation. Bacteria and heaps of zoöglœa are visible among the scales. The granules are piled into irregular heaps, according to Burckhardt, and they give a dusty appearance to the epidermal cells on which they lie; often the outline of these granules is indistinct. According to the same observer, the breadth of the hyphæ is $\frac{1}{1200}$ mm.; and the length from $\frac{1}{15}$ to $\frac{1}{200}$ mm.

Pasquale de Michèle¹ discovered the leptothrix in cases of supposed erythrasma; and this is but another of the proofs that in all diseases of this class, as in so-called "eczema marginatum," there are few instances in which a single mould-fungus develops on the body-surface.

¹ Annal. de Derm. et de Syph., 1891, p. 776.

The entire flora dermatologica of Unna may be effective in more cases than is commonly believed.

Diagnosis.—From all ordinary chloasmata and pigment-macules the spots of erythrasma are distinguishable by the ease with which the superficially embrowned epidermal layers are removed by erosion. *Tinea versicolor* is distinguished from erythrasma with greater difficulty; but the latter occurs in different situations by preference, its patches are more vividly red, and the parasite, under the microscope, presents distinctive features.

The **Treatment** is that of *tinea versicolor*; and the **Prognosis** is favorable, subject to the disappointments arising from frequent relapses.

LA PERLÈCHE.

Under this title, Justin Lemaistre¹ describes a contagious disease observed by himself in more than three hundred children of Limoges. It is not rarely recognized in the skin-clinics of the Paris hospitals. The malady is characterized by dryness, smarting, cracking, and excoriation of the lips, the epithelium of which becomes blanched, macerated, and readily detached. Hemorrhagic and painful fissures form in the direction of the commissural folds. Often plaques are visible, suggesting mucous patches. The disease lasts for from fifteen days to a month, with possible recurrence which may lead to a year's suffering.

The disease is of parasitic origin, communicated by drinking from cups used by infected persons. Lemaistre attributes the disease to a streptococcus plicatilis which he has cultivated in Pasteur flasks. The microbes were originally found on the borders of epithelial cells of the lips of infected children. The parasite lives in the form of a micrococcus in stagnant water, wells, and springs. The disease is one of uncleanness, and is readily prevented by appropriate hygiene.

MYRINGOMYCOSIS.

(OTOMYCOSIS.)

The spores of *aspergillus* (*niger*, *flavus*, *fumigatus*), being conveyed to the external ear, occasionally develop there, especially if they come in contact with fatty substances introduced for purposes of medication. There can then be recognized in the canal whitish masses, covered with grayish-white, yellowish, greenish, brownish, or blackish spots. In the normal ear this vegetation cannot flourish; its occupancy of the canal is conditioned on a maceration of the epidermis due to some antecedent inflammatory or other affection.

Examination of the débris removed from the ear reveals the interlaced hyphæ of the vegetation with spores and occasional flower-like masses which constitute the sporangium of the fruit-capsule of the *aspergillus*, this last containing the receptaculum and radiating sterigmata bearing the conidia. Diffuse inflammation, otorrhœa, and eczema of the part may result. There is usually some deafness, with a sensation of ringing in the ears, and at times a thin serous discharge from

¹ Le Progrès méd., October, 1884.

the external auditory meatus. Löwenberg¹ recommends for the destruction of the mould the injection of dilute alcohol into the canal and the subsequent insufflation of boric acid in powder.

CARATES.

(PINTA DISEASE, MAL DE LOS PINTOS, SPOTTED SICKNESS, CUTE, CARAATE, CATIVI, QUIRICA. *Fr.*, CARATÉS.)

Under one or more of the titles given above has been described by Hirsch, Iryz, and others a group of maladies characterized by the production on the surface of the body of superficial areas of involvement ranging in hue from a yellowish-white to a dark chocolate color, varying with different individuals and exhibiting varying shades upon one affected subject, having a tendency to peripheral extension over the face and extremities, and, in general, except the palms and soles, upon regions exposed to the air, and due to a vegetable fungus developing in the superficial layers of the integument.

The patches of the disease appear commonly over the exposed rather than over the protected body-surfaces, as, for example, over the cheeks, the nose, the forehead, and the temples, in circular or ovoid variously sized plaques having a yellowish or purplish or brownish shade of color. They are often intensely pruritic.

Though displayed for the most part asymmetrically, these patches may cover the entire surface of the body and even invade the mucous membranes of the alimentary tract. When confluence occurs large areas of the skin may be involved, displaying then the usual features of hyperkeratinization, with pityriasic, occasionally larger and coarser scales, infiltration, occasional fissuring, and complete or partial color-change and loss of hair. In final evolution the symptoms are highly suggestive of other dermatoses, such as trichophytosis, favus, some of the forms of lupus, and erythematous eczema. There may be ulcerative complications. The disease occurs at all ages and in both sexes : is more common among the poor and the neglected ; is rare among the whites ; and may endure for years.

Etiology and Pathology.—The effective parasite is of the aspergillus family, fine filaments giving rise to hyphæ which terminate in clubs surrounding chaplets of spores. Sterigmata encircle the sporulating elements. The color of the fungus varies according to the hues of the invaded integument. The fungus is found chiefly in the superficial layers of the epiderm, but may also in advanced cases be recognized in the rete.

The **Diagnosis** is between macular leprosy, tinea versicolor, the several forms of leucoderma and vitiligo, and the varieties of ringworm, pityriasis rubra pilaris, and keratosis ; the recognition of the effective fungus being decisive.

The **Treatment** is by parasitocides, the mercurials, sulphur, chrysarobin, pyrogallol, and potassic permanganate.

The **Prognosis** is favorable save in cases that prove refractory under treatment.

¹ *Gaz. hebdomadaire de Méd. de Paris*, 1880, 2me sér., xvii., p. 579.

MYCETOMA.(Gr. *μύκης*, a fungus.)

(MADURA FOOT, FUNGUS FOOT OF INDIA, PODELCOMA, TUBERCULAR DISEASE OF THE FOOT, ENDEMIC DEGENERATION OF THE BONES OF THE FOOT, MORBUS PEDIS ENTOPHYTICUS, ULCUS GRAVE.)

From the date of the earliest description of this disorder by Eyre in 1806 to a recent date Indian physicians chiefly contributed to the literature of this disease. Among them may be named Brett (1840), Jille (1842), Ballingall (1855), Vandyke Carter (1859), Berkeley and Biddie (1862), Hirsh (1863), Lewis and Cunningham (1875), and still more recently Layet, Liboroux, Bocarro, Bassini, Huntley, Survevor, Boyce, Gémy, Vincent, and Kanthack.

The disease chiefly occurs in India, but is reported to have been observed also in China, Africa, Syria, and, in isolated cases, in a few countries of Europe.

The record of its first recognition on the American Continent is embodied in the apparently unsupported statements of Ruelle,¹ who reports that Collas observed one case at La Réunion; Grall and Grand-Mourrel, each one case in Guiana; and Layet one in Chili and another in Valparaiso. McQuestin² saw three cases affecting native Mexicans in the Civil Hospital of Hermosillo, and Kemper³ reported a case which for some years was thought to be the first occurring in the United States, but a critical examination of the description of the acute symptoms presented by his patient raises doubt respecting the accuracy of the diagnosis. Charles T. Parkes reported that he had successfully operated upon a patient suffering from mycetoma in the city of Chicago. The disease had, however, been contracted in India.

The first case certainly known to have originated in North America, in which no question exists as to the diagnosis, was reported by Adami and Kirkpatrick.⁴ The subject was a French Canadian. Soon after the appearance of this report one of us in connection with Senn and Bishop published the record of an undoubted case of mycetoma⁵ occurring in a native of Iowa who had never been outside of his native State before visiting the city of Chicago. The lesions of the disease, as exhibited in the foot removed from this patient, are depicted on the accompanying plate. Since then Pope and Lamb,⁶ Wright,⁷ and Arwine and Lamb⁸ have published full reports of undoubted cases with demonstration of the fungus and its subsequent artificial cultivation. This record of five cases of Madura foot in North America includes the history of four men and of one woman.

¹ Contribution a l'étude du Mycetome, Bordeaux, 1893, p. 13 et seq.

² Pacific Med. and Surg. Jour., 1873, pp. 652-555.

³ American Practitioner, 1876.

⁴ Trans. Assoc. Amer. Phys., 1895, vol. x., p. 92.

⁵ "A Contribution to the Study of Mycetoma as it Occurs in America," Jour. Cutan. and Gen.-Urin. Dis., January, 1896.

⁶ N. Y. Med. Jour., 1896, vol. lxiv., p. 386.

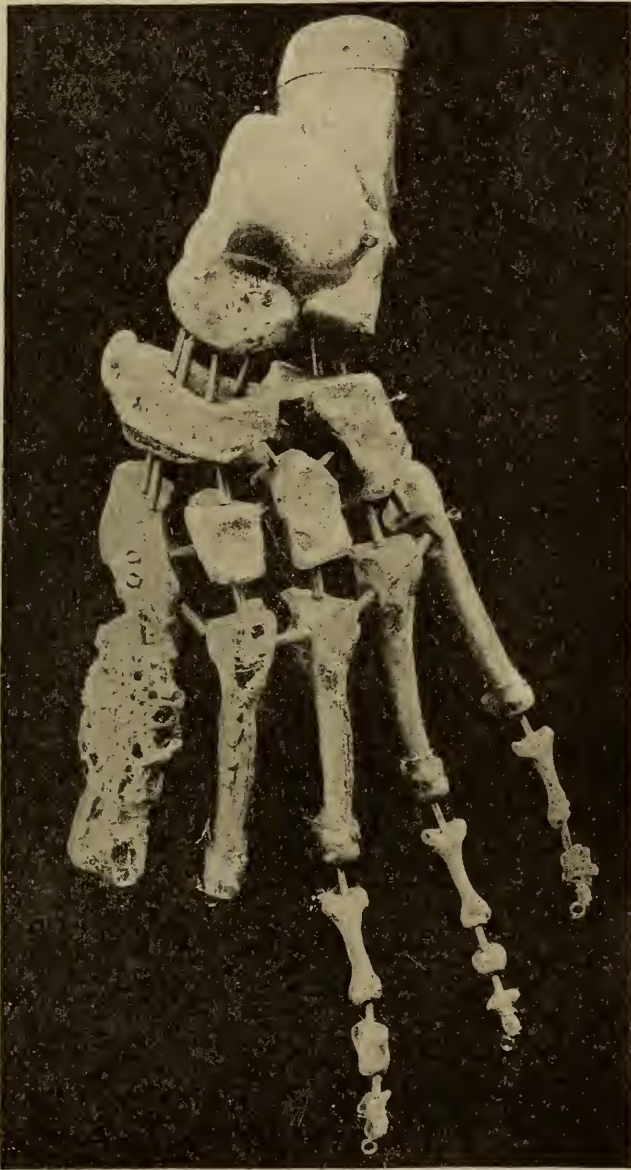
⁷ Trans. Assoc. Amer. Phys., 1898, vol. xiii., p. 471.

⁸ Amer. Jour. Med. Sci., Oct., 1899, p. 393.



Symptomatology.—There are two varieties of mycetoma—the black, and the white, red, or ochroid. Some doubt exists as to whether all are produced by one fungus, seeing that no intermediate forms between the varieties thus distinguished have yet been recognized. The part principally affected in most of the Indian and in the American cases is the foot, and this chiefly of persons walking barefoot; but the hand,

FIG. 94.



Osseous lesions in mycetoma.

the shoulder, the knee, the scrotum, and other regions have been attacked. As distinguished from the lesions of actinomycosis, it is noteworthy that the regions of the jaw and the neck are usually spared.

In a typical case the foot is involved by progressive spread of the disease from the site of a trifling traumatism which often at first heals, and is followed later by the development, near the site of the wound, of

a button or nodule which both increases slowly in volume and is later surrounded by similar lesions. The progress of the disease is exceedingly chronic, as ten and many more years have not rarely been recorded as required for its complete evolution.

In fully developed cases, when the foot is involved, the organ is seen to be largely increased in volume, producing a bulging of the parts posterior to the digits over the dorsum above, and below over the plantar region, giving the sole a convex appearance. Over the tumid parts the skin is beset with numerous pea- to nut-sized isolated nodules, elevated to the extent of several millimetres above the general level, each pierced with a fistulous channel extending from without to the deeper structures. At times these fistulous tracts lead only to the soft parts and especially to muscular tissues; at others the surface of the bone is reached and the osseous tissue is eroded by the growth of the parasite and the coccogenous infection which results from long exposure of the parts to the air. It is through these fistulous orifices that in different cases exit is given to a blackish fish-roe-like substance, or to a whitish material, or even still more rarely, as indicated above, to a reddish substance.

In place of nodules or papules, the skin may be the seat of pustules, of vesicles, of bullæ, or even of abscesses. When but relatively small organs of the body are invaded, such as a finger or a toe, it becomes clear that the tumefaction is not due chiefly to a hypertrophy either of the integument or the bones.

Etiology.—The disease, though of more common occurrence in India than elsewhere, may develop in other lands. The relatively frequent involvement of men is probably due to the greater exposures of the bare feet in persons of that sex. The disease is produced by a vegetable parasite, which obtains access to the tissues, as far as is known, usually through a traumatism.

Pathology.—The effective parasite in Madura foot is the actinomyces *Maduræ* (*streptothrix Maduræ* of Vincent; oöspora *Indica* of Kanthack), a mycelium with branching threads, hyphæ of somewhat greater thickness, and ovoid spores measuring 1.5 by 2 μ . Two forms of granules have been recognized: the melanoid, or "black" variety, which are irregularly shaped and which coarsely resemble gunpowder; and the ochroid, or "pale" variety, characterized by whitish or grayish-yellow bodies somewhat resembling fish-roe. The clinical symptoms of the two varieties are similar. Hektoen¹ distinguishes the pale form of mycetoma by the title actinomycelial, and the black as the hyphomycelial, the character of the black organism having been demonstrated by the successful cultivation of the fungus in the case reported by Wright. Under the microscope the lobate-reniform masses constituting the "grains" are seen to be formed by a dense centrally placed mycelium with peripheral filaments which radiate uniformly from within outward, and which may or may not terminate in "clubs," these last being probably the resultant of the interplay of force between the outspreading fungus on the one hand and the resisting power of the tissues on the other.

¹ N. Y. Med. Jour., May 26, 1900.

In the three areas to be equally recognized on section of the "grains," the central exhibits delicate filamentous threads radially arranged; the marginal zone longer, more distinct, and somewhat more slender threads; while the radial zone, separated from the last by a narrow space, exhibits a few granular threads, but for the most part appears to be made up of a granular tissue, the mycelium of degenerated hyphæ surrounded by a reticulum. Outside of the fungous mass are closely packed leucocytes, new-formed vessels having walls infiltrated with proliferating cells, few or numerous giant-cells, and in many of the lymph-spaces adjacent to the fungi large numbers of amorphous granular masses, refractive and yellowish brown in color, which Carwell believes to be hemosideria. The bones when denuded of tissue are found to be honeycombed with finely carved seams, depressions, furrows, and pits, leaving delicate spicula of osseous tissue projecting between the excavations wrought by the growth of the parasite. It is possible to find, as Adami suggests in the study of his case, intrusive organisms, the result of exposure for so long a period of time of the deeper tissues to the atmosphere. Cultures are made in bouillon and potato-infusion showing a hyphomycete with long branching threads and transverse septa.

The fungus differs from that of actinomyces in that the former reacts indifferently to, while the rays of actinomyces are brilliantly colored by, acid fuchsin.

Diagnosis.—The disease in all cases of long standing is readily recognized by the characteristic deformity it produces, by the escape of fish-roe-like particles in the black variety, and in others by the discharge of the elements of the fungus, which can be determined by the microscope. The nodes or papules visible externally in all well-marked cases, each perforated with a sinus leading downward to the deeper structures, and the painlessness for the most part of the involved organ, are all characteristic.

As distinguished from actinomycosis, it is well to remember that in mycetoma there is never involvement of the viscera; the disease is exceedingly chronic; all systemic symptoms are absent; and the affection is common in countries where actinomycosis is practically unknown.

Treatment.—The disease is radically treated by surgical ablation of the affected organ or by erosion of tissue. Even after evolution of the disease for years recovery in cases so treated is satisfactory.

ACTINOMYCOSIS OF THE SKIN.

(Gr. ἀκτίς, and μύκης, mushroom.)

("LUMPY-JAW." *Ger.*, AKTINOMYKOSE; *Fr.* ACTINOMYCOSE.)

This disease was first recognized in 1887 as due to a parasite which Harz described, from its gross appearances, as the "ray-fungus," occurring in the jaws of cattle. It has since been recognized in man, and still later, by Majocchi, as of occurrence in the skin.

Symptoms.—In actinomycosis this parasite usually effects entrance through a carious tooth, and the skin when implicated is, as a rule,

secondarily involved. Such skin-lesions are more often displayed about the face and neck, more particularly the lateral surfaces of the neck beneath the jaw, where deep subcutaneous nodes, tumors, or swellings, often firm to the touch, livid in hue, thinning at one or at several points after involvement of the integument, finally burst, forming pustular tracts and giving exit to a serosanguineous or bloody and purulent fluid, containing yellowish masses in which the fungus may be recognized. The orifices of the sinus or sinuses after such discharge are usually beset with cutaneous and subcutaneous nodules and uneven lumps, some softened, others firm and indurated, usually reddish or purplish in hue, tender, painful, and often accompanied by pains elsewhere, particularly in mastication, in deglutition, and in certain movements of the head on the neck.

The onset of the disease is insidious, and it is said to occupy months and even years. The nearer to complete evolution of the disease the more rapid, as a rule, is the development of its symptoms. In exceptional cases the malady attacks the fingers, the hands, and other parts of the body. Rarely, secondary actinomycosis of the lymphatic glands occurs. Pringle reported a case in which large areas on the back, lumbar region, and hip were affected secondarily after involvement of deeper organs.¹ Lymphatic metastasis is, however, rare, due, as is believed, to the large size of the fungus-granules as compared with the lumen of the lymphatic vessels.

Etiology.—As in mycetoma, more men than women are attacked as a result of special exposure; a few of the affected have been occupied with cattle and horses; others having carious teeth may have been infected by accidents of contact or in the operations of dentistry. Murphy, of Chicago, had a case of this disease in the person of a woman whose dog had died with a large swelling under the jaw. In most instances there have been submaxillary lesions and carious teeth. The general dispersion of the ray-fungi in the atmosphere, water, and upon the soil is held to explain in large measure the occurrence of the disease in man. Beards of barley, bits of stone, vegetable fragments, etc., have been found in actinomycotic lesions.

Pathology.—Typical actinomycosis is produced by invasion of the human body by “typical pathogenic ray-fungi” (actinomyces), the organisms differing from the “atypical acid-proof ray-fungi,” which in a few instances have produced disease both in man and animals suggestive of certain forms of tuberculosis.

The “typical pathogenic organisms” form long branching threads with stellate radiations, from which the title actinomyces receives its name. The “atypical” forms are distinguished by the absence of spore-bearing hyphæ and by their resemblance in polymorphous development to certain of the bacteria.

The granules which form in human actinomycosis are yellowish or grayish clumps. When closely examined these are found to be a circlet of club-shaped masses radiating from a network of mycelial threads, the ends of which eventually undergo hyaline degeneration or gelatinization. The growth of the parasite in the tissues results in the forma-

¹ Medico-Chirurgical Transactions, vol. lxxviii.

tion of granulation-tissue which may undergo purulent disintegration; and there may be extension of the process by hematogenous metamorphosis, rarely by secondary actinomycosis of the lymphatic glands and vessels, by dissemination by phagocytes of mycelial fragments, and lastly by secondary mixed infections with the pyogenic micro-organisms.

Diagnosis.—All supraclavicular and submaxillary lesions constituted of dark-reddish tumors or swellings, subcutaneous in origin, should carefully be differentiated from actinomycosis. Scrofuloderma is to be recognized by the general condition of the patient (actinomycosis may occur in vigorous young adults); by the absence of pronounced gumma and lymphoma ("gomme scrofuleuse"); and by failure of recognition of the parasite, which is not easy of detection. The occupation of the subject of the disease (as a farrier, stable-boy, or drover) may furnish a clue to the origin of some cases. Care should always be taken, in making a diagnosis, to exclude cases of swellings discharging pus, practically limited to the skin immediately over the lower jaw, with sinuses leading to the bone beneath, in which the disorder is exclusively due to a carious fang of one of the lower central or canine teeth. All these may be relieved by extraction of the offending tooth.

The **Treatment** has been until recently by surgical procedures, erosion, antiseptics by mercuric chloride, boric acid, and dressings with antiseptic gauze. Gautier has employed with success an electro-chemical method of treatment, by the use of platinum needles and injections of a 10 per cent. potassium iodide solution. Two needles are inserted, one connected with each pole of the battery, and a current of fifty milliamperes is passed; a few drops of the iodine solution are injected during the flow of the electricity, the patient being anæsthetized. Before attempting surgical measures potassium iodide given internally should be tried, since it has proved successful in a number of cases. Pringle's case, mentioned above, improved under the iodide, though the patient was never able to take the remedy in large doses, and eventually died from amyloid disease. Morris reported a case which under the influence of the iodide lost its characteristics and the fungus gradually disappeared. Other cases are reported in which recovery followed administration of the iodide.

Prognosis.—It was held until lately that the prognosis was favorable only in case of thorough and prompt removal of all diseased tissue. In other cases a fatal result was anticipated.

Schlange, however, at the Congress of German Surgeons held in 1890, called attention to the fact that of nearly two hundred patients under his observation (over one-half traced since 1886), forty were completely cured for more than two years; and in eighty the disease remained limited to the head and neck. After thirteen years of involvement one patient at the date of the report was alive. All extensive operations for relief of the malady are now abandoned. Potassium iodide is effective in some cases, and is worthy of a trial in all. Even actinomycosis of the lungs and viscera is susceptible of spontaneous recovery. Cases apparently hopeless have recovered in five and six years. Intestinal complications are grave.

BLASTOMYCOSIS OF THE SKIN IN MAN.

(BLASTOMYCETIC DERMATITIS, SACCHAROMYCOSIS HOMINIS, DERMATITIS BLASTOMYCOTICA. *Ger.*, HEFENMYKOSE.)

Blastomycosis of the skin in man is a disorder induced by the presence in the skin of a vegetable organism belonging to the family of the yeast-plant, characterized by a slow progression from one point to another of the integument, the sites of invasion being for the most part characterized by vegetations and minute wart-like elevations of the surface, which may break down into ulcerations capable of producing grave destruction of tissue.

The invasion of the body of animals by a blastomyces had been recognized and carefully studied before cases of evolution of the disease in the human family had been determined. The dermatoses it is capable of producing in man have been recorded in a group of cases by Gilchrist, Busse, Buschke, Wells, Hessler, Hektoen, Stelwagon, Dyer, and others, including ourselves.¹ Of about a score of recorded cases occurring in man but one or two have been recognized outside of America.

Symptoms.—The disease commonly begins with the production of a split-pea-sized papule which may later assume a pustular character, elevated, circular in outline, and extending slowly by multiplication or enlargement either in one linear or in several directions. In some cases the field traversed assumes permanently a verruciform aspect, the patch or patches being covered with raised and isolated filiform projections one to four millimetres in height, each capped with a crust formed by desiccation of sero-pus. The papillomatous character of the patch, with a somewhat reddened and exactly defined peripheral border, is strongly suggestive of verrucous tuberculosis. When fully developed the affected area may include the larger part of the surface of a limb or the greater part of the facial region. The patch of this size is often covered with a malodorous puriform secretion smeared over florid vegetations, here and there commingled with false membranes, and has a sharply defined and distinctly elevated ridge, more precipitous on the side of the normal skin. In some cases ulceration progresses between the papilliform vegetations and beneath the crusts. The destruction of tissue resulting may in exceptional cases be grave,

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PLATE XXVI.



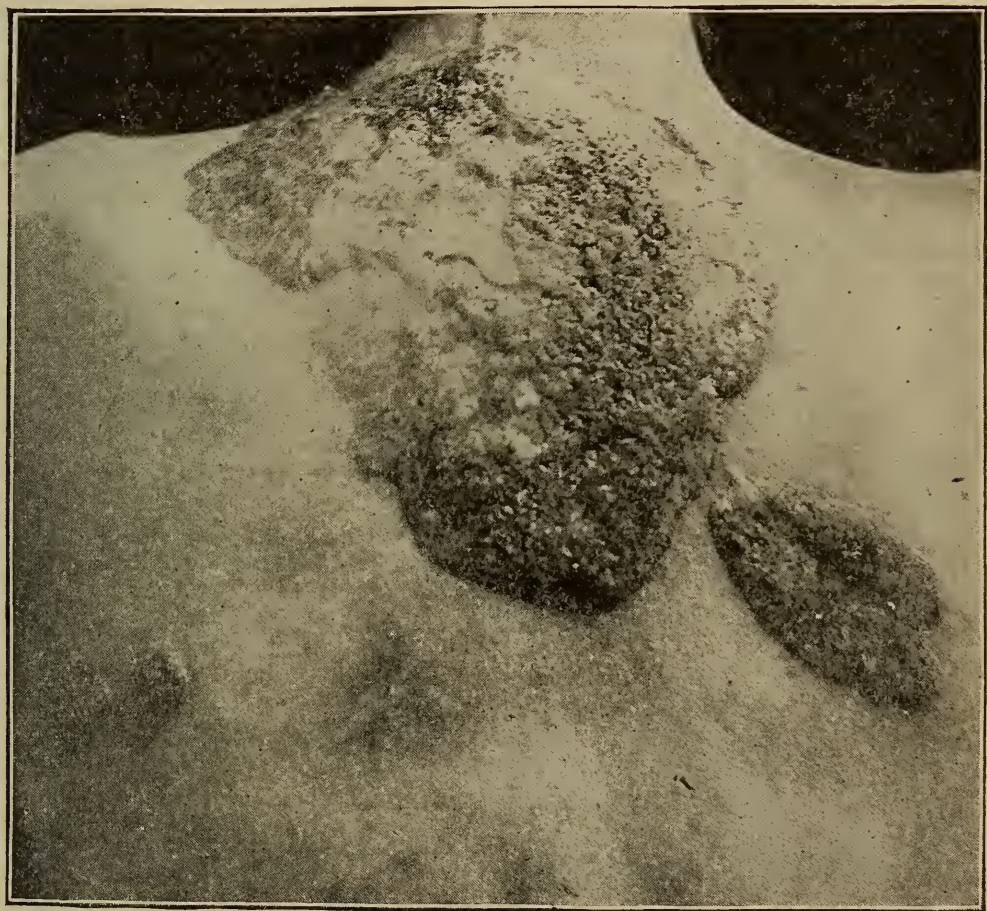
Blastomycetic Dermatitis.

(From a photograph.)

the eyelids, for example, being destroyed and other organs seriously implicated.

Areas of several months' duration usually show in the centre, or in patches irregularly placed between the verrucous portions, an elevated, firm though not indurated scar-tissue varying from a sixteenth to a quarter of an inch in thickness. This tissue is reddish, pink, or white in color, and contains numerous pinhead-sized abscesses, which are usually deep-seated and filled with a gummy or cheesy material in which the blastomyces are readily demonstrable. In some cases as the disease advances it leaves in its wake a remarkably thinned, whitish, atrophic integument looking like a delicate scar.

FIG. 95.



Blastomycosis.

In Busse's case, which terminated fatally, the occurrence of a blastomycotic septicaemia seems to have been demonstrated. The parts chiefly involved in the patients whose records have been published were the ear, the forehead, the cheek, the brow, the temple, the eyelids, the nose, the lips, the neck, the scrotum, the thigh, the leg, and the dorsum of the fingers, of the hand, and of the wrist. In one of our cases the disease was limited to the lower lip, producing a tumor that resembled an ordinary epithelioma. The clinical histories point with clearness to the fact of transference of the effective germs of the disease from point to point by the medium of the hands.

Etiology.—The patients have sometimes a good family history: others have been cachectic: a few only have given an unmistakable history of tuberculosis in the family. None has been shown to suffer from syphilis. Of seventeen patients, four only were women. The average age of the infected was forty-three years. The essential agent in the production of the disease is the yeast-fungus.

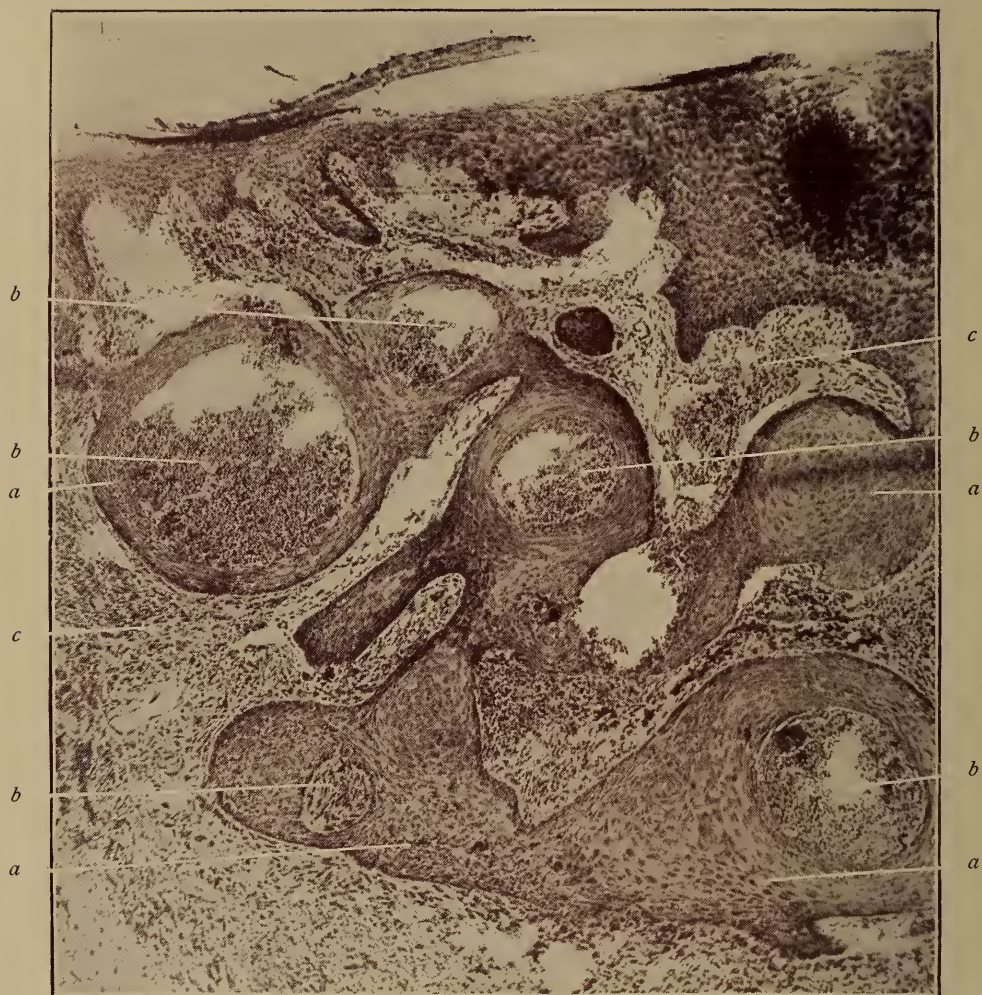
Pathology.—Histologically the lesions resemble those of verrucous tuberculosis or of superficial epithelioma, yet differ from both. The surface, on which are seen irregular masses of *débris* consisting of pus, blood- and epithelial cells, and various bacteria, is marked by irregular papilliform projections, between which are corresponding depressions. The horny layer may be destroyed or it may extend in thickened masses between distorted papillæ.

The rete is everywhere the seat of excessive hyperplasia, producing branching down-growths varying greatly in size and shape. Polymorphonuclear leucocytes are scattered throughout the epithelium, both between and within the cells, and occur often in small collections which form the beginning of miliary abscesses. These abscesses are characteristic of the process, and are found in all parts of the hyperplastic epithelium, in places breaking through to the surface. They contain leucocytes, nuclear fragments, detached epithelial cells, epithelial detritus, red blood-corpuscles, the organisms peculiar to the disease, and in many cases giant-cells. The epithelial cells surrounding the abscesses are flattened, but appear to take no active part in the process. The epithelium is separated from the corium in most places by a distinct layer of columnar cells, in which mitoses are seen occasionally. The rete-cells in general are large and appear swollen, the prickles being very conspicuous and the intercellular spaces increased. Premature cornification, more or less complete, occurs in scattered individual cells, in groups of cells, and occasionally in isolated epithelial whorls. Single giant-cells, surrounded by a few leucocytes, are sometimes seen in the epithelium at some distance from the corium.

The corium is the seat of subacute, chronic, and occasionally of acute inflammatory changes. Miliary abscesses occur, especially in acute lesions. The infiltration consists chiefly of leucocytes, endothelial cells, and plasma-cells, and is sometimes very dense. The number of mast-cells and giant-cells varies in different cases. Tubercle-like nodules are found in some instances. In several cases sections showed numerous hyalin bodies which varied greatly in size, and occurred chiefly in plasma-, giant-, and new connective-tissue cells.

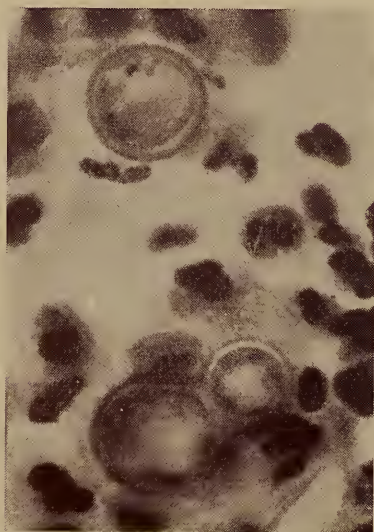
The appendages of the skin apparently play but a passive part in the process.

The blastomycetes are found in miliary abscesses, between the epithelial cells and in the corium, and are always surrounded by more or less evidence of inflammation. They are rarely found within the cells. The giant-cells, however, usually contain one or more of the parasites. The number present in the tissue varies greatly. In some cases a dozen or more can be seen in a single field of the microscope, while in others they are found with difficulty. They occur usually in pairs of unequal size, but also singly and in groups. They are readily seen in sections



Vertical section from a typical lesion.

a, hyperplasia of rete; *b*, abscesses in epithelium; *c*, infiltration of cutis. x 55.



Budding organism in tissue. x 1200.



Hanging drop. x 1200.

BLASTOMYCOSIS OF THE SKIN.

(From photo-micrograph)

stained with hæmatoxylin and eosin or other common stains, but methylene-blue is best for showing the different parts of the organism. The fungus is easily demonstrated by placing fresh or hardened sections, or pus, in a strong solution of potassium hydroxide, or in equal parts of liquor potassæ and glycerin; the organisms then appear as doubly contoured, highly refractive bodies.

When well stained, the parasite is seen to be a round, oval, or slightly irregular body, having a well-defined, double-contoured, homogeneous capsule, and a finely or coarsely granular protoplasm, which is separated from the capsule by a clear space of varying width. The capsule resists the prolonged action of strong alkalis and acids. The protoplasm often contains a clear vacuole, which varies greatly in size in different bodies. Mature organisms have a diameter of from 7 to 20 μ , though smaller and larger forms are seen occasionally.

Budding forms are seen in all stages of development; the capsules and clear space are pushed out apparently by the protoplasm to form oval buds, which grow to about one-half the size of the mother-cell before separating from the latter. Organisms in pairs of unequal size are more common than budding forms.

Cultures of blastomyces are recorded in nine of the cases so far reported, and have been obtained from the pus and from tissue. Associated with the blastomyces in several cases have been found various bacilli and cocci, none of which has been demonstrated to have any definite relation to the process. In two cases repeated inoculations of media with pus from one of the lesions gave rise to pure cultures of the blastomyces, showing that it was pyogenic.

The organisms in the different cases have varied in minor details, and in several instances have been modified considerably by varying the culture-media and other conditions of growth.

Inoculation-tests have been largely unsuccessful, but in several instances subcutaneous injection of pure cultures of the blastomyces has resulted in the production of a local abscess, or of an inflammatory granulation-tissue, from which the fungus could be recovered. The organisms in four cases¹ have been inoculated in animals with the production of tubercular-like nodules, or other inflammatory areas, in the lungs, kidneys, and other organs, from which the fungus has been recovered and cultivated.

An effort has been made by certain Italian investigators to establish a relationship between blastomyces and malignant tumors, but such a relationship is far from being satisfactorily demonstrated.

Diagnosis.—Blastomycosis of the skin in man is to be distinguished chiefly from verrucous tuberculosis. The exact distinction between the two can be established only after microscopical examination of the tissue and pus, or by cultures and animal inoculations. In general the disks of lupus verrucosus as compared with patches of blastomycotic infection are more slow of evolution, are more often limited to relatively small areas, are found with greater frequency about the lower forearm and the ankle, and are surrounded by a more definitely violet-tinted halo. Other disorders to be excluded by con-

¹ Gilchrist-Stokes; Curtis; Hyde-Hektoen; Montgomery-Ricketts.

sideration of their characteristic features are lupus vulgaris and other of the tuberculoses and paratuberculoses of the skin, the vegetating forms of syphilis, and protozoan infection, which, it is now believed, may be a variant of blastomycosis.

The **Treatment** is by radical destruction of the affected part with the aid of the curette or by the internal administration of potassium iodide in full doses, a measure which has been productive in some cases of brilliant results. Bevan is to be credited with first employing this method of treatment in one of our cases. Blastomycotic septicæmia is to be combated by the usual energetic measures generally employed in such complications.

The **Prognosis** may at times be exceedingly serious. Good results should follow early and energetic internal and local treatment. Two of our cases treated with the iodide have apparently recovered completely.

REFRACTORY SUBCUTANEOUS ABSCESSSES CAUSED BY A SPOROTHRIX are reported in two cases by Schenck,¹ and Hektoen and Perkins.² In both cases infection occurred on the index finger, and produced subcutaneous nodules and abscesses along the lymphatics of the arm.

DISEASES DUE TO ANIMAL PARASITES.

SCABIES.

(Lat. *scabere*, to scratch.)

("THE ITCH." *Fr.*, GALE; *Ger.*, KRÄTZE.)

Symptoms.—Scabies is a disease of polymorphic symptoms, which may be viewed as an artificial eczema or dermatitis, produced by the invasion of the itch-mite (Fig. 96). The objective symptoms differ according to the extent to which the skin is primarily invaded by the parasite, or is secondarily injured by traumatism and severe scratching of its surface.

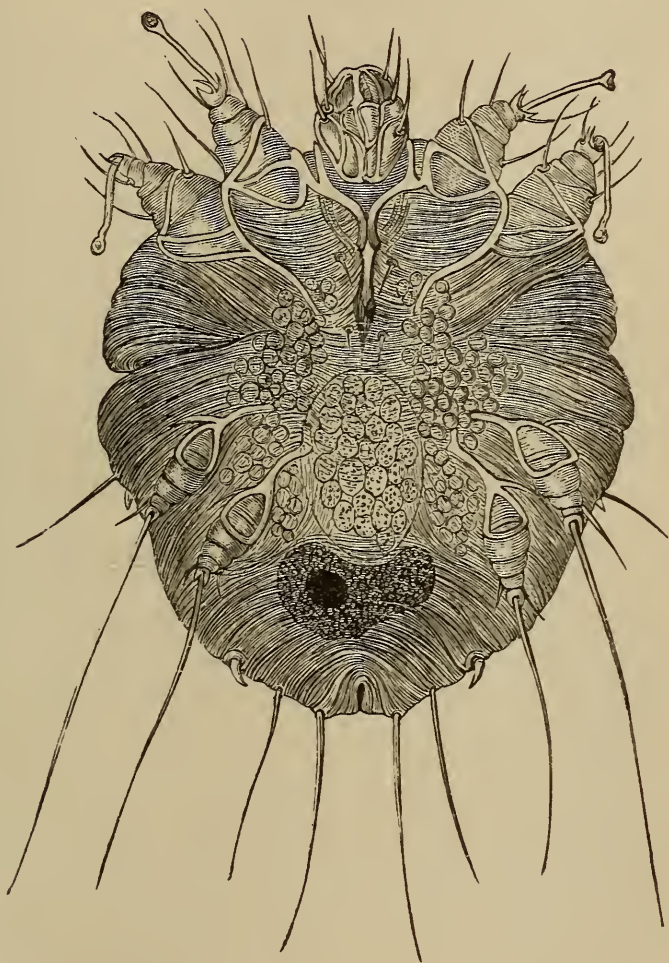
Prominent among the objective symptoms is the cuniculus, or acarian furrow, an elongated gallery excavated in the epidermis by the female *acarus* soon after her impregnation by the male. The male does not enter the skin, but is lodged beneath the crusts or other exuviae which gather upon its surface. This cuniculus, or furrow, is a whitish or a yellowish, slightly arciform, linear lesion, with regular parallel borders covered with dots or specks of blackish aspect, representing fæces of the mite. The furrow (Fig. 97) terminates at the upper extremity by a vesicle, pustule, or exfoliation of the surface at the site of an infundibuliform depression; and at the deeper extremity by a whitish and yellowish, shining and salient point, representing always the *acarus*. This is the most characteristic symptom of scabies.

¹ Johns Hopkins Hosp. Bull., Dec., 1898.

² Jour. Exper. Med., 1900, vol. v., No. 1.

The "head" of the gallery, where the parasite first entered the skin, is usually whitish, and is more elevated than the "tail," where the acarus rests after laying its dozen or more of eggs. At times the entire cuniculus forms an elevated ridge, rather than a thread-like depression, with white dots along its summit. When the roof of the vesicle at "the head" is torn off by scratching the effect is to produce a reddened spot at its site, surrounded by a whitish moat running around the entrance of the gallery.

FIG. 96.



Female acarus fecundated (ventral surface). An ovum arrived at maturity is visible within the body. (After KAPOSI.)

When the burrow exists it can be recognized most perfectly in the interdigital spaces and on the skin of the penis as a tangential line, running from a vesicle, papule, or pustule to a distance of from one-eighth of an inch to an inch. It resembles a beaded, dotted, yellowish or blackish thread, the color being more pronounced in comparison with a fresh-colored and washed skin, and less marked in contrast with a soiled surface; being, in a soiled and subsequently washed integument, most conspicuous in proportion as the small puncta have served to entrap particles of dirt. The cuniculus may be curved, angular,

or tortuous; and occasionally may be seen well-nigh completely covered by a bulla, pustule, or vesicle extending its entire length. In these cases, however, the female always penetrates beyond the peripheral wall of such lesion, working her gallery beyond it and more deeply, lest she be lifted by the exudation out of reach of the succulent rete where she feeds.

Hebra points to the fact that between two parallels, one drawn through the nipples and another at a short distance above the knees, on the anterior face of the body, can be recognized the greater part of the eruptive lesions in every case of scabies.

The disease is indeed one peculiar to those classes which are the familiars of filth and poverty, occurring among these at all ages and in both sexes. As a matter of accident, it may appear, though rarely, in individuals of high social station. It is much more common in Scotland, Austria, Prussia, Sweden, Norway, France, and the Orient, than in America. During the late Civil War it prevailed with relative frequency among the masses of Americans associated in regiments with foreigners who had been but a short time in the country; and steadily decreased after that time. But few cases until lately were seen annually in the public clinics of our large cities, though here and there, chiefly among newly arrived immigrants, isolated "nests" of the disease were discovered. The later influx of immigrants to the United States (notably the Columbian Exposition of 1893), however, in the last few years, has again brought the disease into prominence by reason of its greatly increased frequency.

In consequence of the irritation produced by the parasite and the traumatisms of scratching the region invaded may exhibit all the symptoms of acute and chronic eczema including vesicles, pustules, wheals, small papules, hyperæmia of the skin upon which these rest, crusts formed by dried serum, pus, and blood, excoriations, fissures, and, in cases of long standing, pigmentation of the skin where the disease has existed. These lesions may coexist, several appearing at the same time upon the skin of an affected individual; small vesicles and pustules, with perhaps a few short cuniculi visible upon their summits; excoriations; larger and longer cuniculi interspersed between inflammatory papules; a tumid skin, evidently the seat of a mild grade of dermatitis; and crusts here and there, beneath which male and young acari are ensconced—such is the composite picture of a typical eruption in scabies.

It will be remembered that the acarus family find nutriment, shelter, and all they require on the person of the individual whose skin they inhabit, and there is no inducement for them to colonize at the instant of the first opportunity offered. The transfer of a male acarus alone, from one person to another, would not insure a generation of the young; and the unimpregnated female could not alone do more. As for the impregnated female, Hebra, on several occasions, failed to induce scabies when one such female only was transferred intentionally to a sound skin and was seen to penetrate it. Lastly, the eggs alone would not suffice, for they have to be nicely planted within the epidermis in order to be hatched safely to maturity. In brief, only the more inti-

mate contacts of the bed at night, and the application of nails charged with acari of both sexes, especially the young, are to be regarded as most effective for the transmission of the disease. This fact explains why nearly seven men are found to be affected with scabies to one woman. Women, as a rule, are more inclined to sleep alone, or with those only to whom they have family ties; while laborers, boys, apprentices, and persons of that class, including those who are strangers to each other, at times occupy the same beds, especially in large cities, where they are often huddled together at night like swine.

The female acarus may be recognized always at the terminal extremity of her gallery, for it is now known that she does not in her lifetime leave it for any purpose, as was at one time taught. The intruder here shows as a minute, whitish, clearly defined dot, presenting a contrast in this particular with the blackish feces in the gallery behind, and may in a good light, by a person of some dexterity and fair eyesight, be extracted on the point of a cambric needle from her lodging-point. It is important to know that this parasite may be recognized by the unaided human eye. Its characteristic tortoise-like body exhibits most of its anatomical peculiarities under a glass enlarging the figure but one hundred diameters.

The regions affected by the eruption are the sides and roots of the fingers and toes; the flexor aspects of the wrist-joints; the feet (and

FIG. 97.



Acarian furrow, from the lumbar region. The female acarus is visible at the terminal extremity of the furrow with ventral surface exposed, and containing a mature ovum; two ova, next her, have been laid during the day; the third exhibits traces of the embryo; the twelfth exhibits a mature larva (*a*); twelve empty shells are also seen; between these the feces are represented by black points. (After KAPOSI.)

especially in women, the delicate skin of the feet near the instep, partly dorsal, partly plantar in situation); the palms (especially of women and children) and the dorsal surfaces of the hands; the buttocks (more particularly in those who are seated in the trades and occupations of life); the extensor faces of the joints; the belly; the penis and scrotum in men; the anterior folds of the axillæ; the nipples and breasts of women; the elbows and knees, rather than the popliteal space and bend of the elbow; and the anal region. Scabies, prurigo, and pruritus are alike in this, that in each the face and posterior aspect of the body display the fewest of any lesions visible. In general, portions of the body subjected to constant pressure by the clothing, as, for example, the regions pressed by the corset of the woman and the waist-band of the trousers in man, are sites of predilection. In other cases the disease is encountered in the axillæ, the groins, and, as a matter of rare exception, over the entire surface of the body.

The itching of scabies is occasionally severe, and has, in fact, conferred upon the disease its familiar English title, "the itch." This sensation is usually worse at night, when the parasite is rendered active by the heat of the body in bed, retained by the bed-clothing. It differs somewhat in different cases, being at times the cause of but little complaint. There is nothing characteristic, however, in the occurrence of this symptom, as equally severe pruritus accompanies eczema unconnected with parasites.

The itching which results from the epidermic tunnelling in progress is often noticeably more severe than would be suggested by the moderate number of skin-lesions visible. When these lesions (puncta, vesicles, pustules, blebs, papules, resulting crusts, furrows, excoriations, etc.) are found upon the hands the itching becomes so great that the infested person scratches also the accessible parts of the skin, where there were originally no acari, such as the inner side of the thighs, the lower belly, etc., as Hebra suggests, simply because they are "handy." Hence it is that the picture comes to resemble that of all pruritic and scratched skins.

Several artificial forms of this polymorphic affection are occasionally noted. In children the face may become diseased after contact with the breast of the mother or the buttocks after contact with the flexor aspect of the nurse's arm. Large vesicles, and even rupioid bullæ, may result from the irritation of their tender skins. Again, in subjects predisposed to eczema for any reason the invasion of the parasite in one region of the body, possibly a region of preference, may originate an eczema in another locality whither the parasite has not wandered. In other cases the most aggravated forms of eruption are seen, usually in persons of filthy habits who have long suffered from the malady. Thus, extensive epidermal callosities form, filled with débris of dead parasites unable to find nutriment longer in the cornified rete; or extensive greenish and blackish crusts cover colonies of acari which survive beneath them for generations of their race. The nails in such extreme cases may be involved. The so-called SCABIES NORVEGICA, or "Norwegian itch," belongs to this class. Hessler¹

¹ Med. News, May 13, 1893.

reported a case in which the entire surface of the body was covered with large, thick scales, which were shed freely and were riddled with acarian furrows. By counting the number of parasites in a scale of a given size he calculated that the man had upon his person at one time not less than 2,000,000 mites and 7,000,000 eggs.

As a rule, the disease does not advance to severe grades. The parasites having gained lodgement in the skin produce characteristic symptoms of the disease in the average of cases, and, though unrecognized and persisting for weeks, are the sources of so much annoyance that treatment of some sort is instituted which is apt to restrict extension of the malady, certainly in America, within moderate limits. Usually after lodgement is effected a week or a fortnight elapses before the first characteristic furrow is formed, though the pruritus is of earlier occurrence. The extension of the disease by the maturing and ravages of young acari requires a few weeks more, so that in the course of from two to three months the evolution of the malady may be considered complete. In the course of about three months more the disease, unchecked, may become generalized.

Even the animal parasites elect the soil upon which they thrive, and indeed, after such election, thrive well or ill according to the conditions present. This is not only exemplified in the matter of individual susceptibility, but in the conditions of health of an affected person. Thus, in puerperal and typhoid fevers and other grave states of systemic disturbance the parasites perish in the skin and the eruption disappears; classical symptoms may recur in convalescence if one or more acari have survived with sufficient vigor to reproduce their kind.

Etiology.—The disease is produced only by the *acarus scabiei* (or SARCOPTES SCABIEI), and is thus contagious, the parasites being introduced upon the surface of one individual mediately or immediately from the skin of another infested man or an animal. All persons are supposed to be susceptible to the disease, but the difficulty of intentionally transmitting it by contagion is greater than that of inducing the leech to fasten itself indiscriminately upon any given skin. The brief shaking of the hand or transient personal contacts of the daytime are in many cases insufficient for contagion. Few practitioners of medicine suffer after careful examination of a patient. When a patient affected with scabies is exhibited at the clinic he is minutely and without ill results examined by dozens of students. It is probable that the contacts of the night incidental to the occupation of the same bed, or the use of gloves and other articles of apparel containing parasites or their ova, are essential to transmission of the disease.

Pathology.—The pathology of the eruption induced by the parasite is that of the various phases of exudation. The differences between scabies and all other eruptions of similar type depend, in the case of the former, upon the peculiarities of the exciting cause of the disease. In the description of this, the *acarus scabiei*, aid has been derived from the chapter devoted to this subject by Kaposi.

The female *acarus* (Fig. 96), visible as a yellowish-white dot at the cul-de-sac of her subcutaneous gallery and removed thence on the point of a fine needle, is visible to the naked eye, but is best examined under

the microscope. The body is oval, with a short projecting head and a convex dorsum transversely corrugated, with short spinous processes projecting for the most part backward, a direction largely followed also by the eight long bristles which are most noticeable at the posterior extremity of the trunk. The posterior portion of the dorsum also exhibits a series of recurved, short, hook-like projections, arranged circle-wise, about the anovaginal orifice.

The flat ventral surface exhibits eight short claws or legs, four anterior and four posterior. The former are set near the head, and are provided each with hairs and a long pedunculated sucker; the latter are armed solely with long, straight bristles. All the eight legs have five articulations. The head is oval in shape, and is provided with four pairs of mandibles and six palpi. There are two ventral outlets; and a stomach, intestines, ovaries, muscles, and even mature ova can be recognized internally.

The males are smaller than the females and fewer in number. They differ also in this, that the posterior extremities are provided with suckers and stalks, as are the anterior extremities of the female. Situated between the stalks and the median line is a horseshoe-shaped mass of chitin ensheathing a fork-shaped penis. They are said to die in the course of from six to eight days after copulation. The latter survive from twenty to sixty days.

The female alone, as has already been said, penetrates the epidermis. This act she accomplishes by inserting the head first into the tissues of the skin, the body disappearing afterward, and depositing behind, in the course of her progression downward, one or two eggs daily until from twenty to fifty have been laid. The eggs are oval, their longitudinal axes placed transversely to the cuniculus. In the two or three eggs found nearest the female only a yellowish color can be distinguished; in the third to the fifth, traces of the embryo are recognizable; the sixth to the ninth contain larvæ; and in the oldest the head and front legs can be discerned. When mature the shell of the ovum is ruptured, usually between the third and sixth day, and the young acarus reaches the surface of the skin either by making exit at the original point of entry of the mother or by rupture of the roof of the burrow. It subsequently buries itself in the skin for a brief time while the process of casting its slough is completed. There are three of these periods of existence. Before the first period is accomplished the young acarus is provided with but two pairs of posterior extremities, two anal bristles, and ten dorsal spines. After the first period it is an octopod with four oval bristles and twelve dorsal spines. At the second period it gains two dorsal spines, and after the third it possesses fourteen. The acarus survives but a few days when removed from the skin and immersed in liquids which protect it from the air, such as water, oil, etc.

Transmission to man of the acarus peculiar to the horse, cat, sheep, rabbit, elephant, etc., may be accomplished; but the colony under these circumstances rarely thrives. The same is true of the human acarus when transferred to the lower animals.

Diagnosis.—The diagnosis of scabies must rest upon the recognition

of its special features described above. There are no lesions peculiar to the disease save the cuniculi, or furrows, made by the parasites, and they, it will be remembered, do not appear until one or two weeks have elapsed after infestation. They may also be obliterated or be concealed by excoriations when the finger-nails plough them open, or by pustulation and subsequent crusting when the irritation induced is excessive. In every well-marked case, however, cuniculi can be discovered, if not on the fingers, wrists, or forearms, at least on the penis, the breast near the nipple, or upon some other covered portion of the body. With care and a little dexterity a fine cambric needle can then be forced into the furrow well down to and a little beyond its remote cul-de-sac, and the *fons et origo malorum* be thence extracted and placed under the objective of the microscope.

Next to the cuniculus and its inmate or inmates, the two most important diagnostic features of scabies are the polymorphism of the eruption and the sites of its most frequent occurrence. These sites may be described as the most important of the two. Few skilled diagnosticians would fail to entertain a suspicion of scabies in a case of supposed "eczema," existing upon the fingers, wrists, and penis only, or upon the breast of a mother, and the face and buttocks of her infant, or the arms of its nurse.

At the same time it is a matter of great importance to remember that eczema is often attended with very severe itching; that this sensation may be intensely aggravated after retiring to bed at night; that eczema is often limited to the hand; it is not rarely characterized by interdigital vesicles and pustules; and is, indeed, in America very much the more frequently encountered of the two diseases. The popular conception of scabies holds to the belief that the disease is exceedingly common; that every severe itching with a cutaneous exanthem is produced by "insects" or "worms" in the skin, and that transient casual contacts are abundantly capable of transmitting the offending parasite. Many more cases of simple eczema are supposed to be scabies than the reverse. There are few villages in this country which cannot lay claim to an "itch," often known by a name of local significance. Among these provincial titles may be counted the "prairie itch" of the West. These affections are, as a rule, forms of eczema quite unconnected with the existence of a parasite, and incurable generally by the parasitocides too often employed to "kill" the disease. In all such instances the absence of the characteristic features of scabies described above, the absence of a history of contagion, and the presence of that of an alternating relief and aggravation of the symptoms, will point to the character of the malady. In the severe pruritic affections of the West and the Northwest of America, described in the chapter devoted to the several forms of pruritus, it is noticeable that the patients are often cleanly—those who are careful as to the hygiene of the body. Scabies is really a filth-disease, and is best recognized among the filthy classes. Of diagnostic importance is the relative rarity of scabies among other cutaneous affections, pruritus included, observed in the United States.

The Statistical Committee of the American Dermatological Association from July 1, 1877, to January 1, 1898, reported 318,500 cases

of skin-diseases of all kinds occurring in the United States and Canada. Of this number, 11,560 were instances of scabies, a percentage of 3.66 to the total number of affections tabulated. The influence of temporary increase of population and the crowding together of persons in large centres, many of whom came from foreign countries, is well illustrated by the statistics of scabies in the year following the Columbian Exposition held in the city of Chicago. During the year of the fair (1893) 901 cases of scabies were reported in the United States. During the year 1895, however, but two years afterward, the total number of scabies was but 383, the proportion to all cutaneous disorders being 2.531.

Treatment.—The treatment of scabies has in view the destruction of the parasite and the relief of the cutaneous disorder which the former has induced. Ordinarily these two indications are fulfilled at the same time. The destruction of the parasite is usually followed by relief of the resulting cutaneous lesions; and the skin, freed from the burrowing acari, is no longer tormented by the scratching, which in extreme cases is not only irresistible, but is also an important element in the aggravation of the lesions. In other cases, however, the resulting eczema or dermatitis persists after the removal of the original cause of the disease, and it demands special attention. Care should always be had to avoid treating the delicate skin of the infant with the severer remedies efficacious upon the thicker integument of the adult.

Sulphur, in all its forms and various combinations, has long held the highest esteem in the treatment of the disease. Other remedies, however, of acknowledged efficacy are employed with satisfactory results, most of them owing their usefulness to the strong odor they emit. Among these remedies may be named carbolic acid, petroleum, naphthol, the oils of cloves, cinnamon, rosemary, and mint; tar, balsam of Peru, and balsam of tolu; styrax, staphysagria, Vleminckx's solution (heretofore described), and *sapo viridis*.

Sulphur is commonly employed in the form of an ointment, 1 to 2 drachms (4.–8.) to the ounce (30.), thoroughly rubbed, first into the affected patches, especially between the individual fingers (or toes), about the wrists, over the palm and dorsum of the hand, into the axillæ, about the nipples, penis, buttocks, or other invaded parts, and, finally, over the cutaneous surface in general, the head alone excepted. If no severe eczematous complications exist, the inunction is well preceded by a warm soap or a warm soft-soap-and-water bath; but in the event of such complication the bath should be deferred as decidedly injurious in the inflamed condition of the skin.

The first inunction is preferably performed at night, after which the patient retires to bed enveloped in woollen underclothing or wrapped in a blanket. It is neither wise nor necessary to induce sudation by these measures, for the skin is best retained in simply a greasy condition, unmacerated by sweat. In England it is customary to bathe on the ensuing morning, but it is preferable to defer the bath until the cure is complete, however disagreeable the condition of the integument may be to the sufferer. The sulphur-inunctions are thus repeated for three successive nights, a thorough warm water-and-soap bath being finally

employed for the purpose of cleanliness. The clothing meantime should either be thoroughly disinfected with sulphur, be immersed in boiling water, or be subjected in a stove or furnace to a dry heat capable of destroying all acari and ova which may adhere to it.

In France, the routine treatment of scabies is always preceded by a thorough friction for twenty minutes with soft soap, special attention being as usual directed to the invaded areas. This operation is at once followed by a bath in warm water, during which the surface is also thoroughly scrubbed for from thirty minutes to an hour. Lastly, the parasiticide is well rubbed on for fifteen minutes, the patient is redressed in the underclothing (disinfected during the progress of the bathing), and the final cleansing of the skin with water is practised within twenty-four hours.

When a resulting eczema demands attention it is to be treated in accordance with the general principles considered in the chapter devoted to that subject. In this case the dusting-powders, the oleated lime-water, and the zinc, diachylon, and even more stimulating ointments, may be employed with advantage. Generally, after a vigorous course of external treatment with sulphur, the patient should be instructed to defer any further topical applications to the skin for a week or more, in order to test the efficacy of the method pursued.

Sherwell¹ finds sulphur in powder as efficacious as in ointment and less disagreeable. He directs the patient, after a soap-and-water bath, to rub gently over the body half a teaspoonful of sulphur lotum, and to dust the same amount between the sheets of the bed occupied at night. The bath, the powdering of the body and bed, and a change of clothing are repeated every two or three days. In the average case one week of such treatment is sufficient.

One of the following formulas may be substituted for the ordinary sulphur ointment:

R	Sulphur. flor.,	℥xij;	48	
	Potass. subcarb.,	℥vj;	24	
	Adipis,	℥ix;	270	M.

Hardy's modification of Helmerich's ointment.

R	Styracis liq.,	f ℥j;	4	
	Petrolei, }			
	Ol. olivæ, }	āā f ℥ss;	āā 15	
	Balsam. Peruv.,	f ℥ijss;	10	
	Spts. sapon. virid.,	f ℥v;	20	M.
				[Kaposi.]

R	Potass. sulphuret.,	℥v;	20	
	Sapon. alb.,	℥xx;	80	
	Ol. oliv.,	f ℥iv;	16	
	Ol. thym.,	gtt. xv;	1	M.
				[Jadelot.]

R	Sulphur. sublim., }	āā ℥ss;	āā 2	
	Balsam. Peruv., }			
	Adipis,	℥j;	30	M.
	For use especially in the scabies of children.			[Duhring.]

¹ Jour. Cutan. and Gen-Urin. Dis., 1899, p. 494.

Hebra's modification of Wilkinson's salve, Vleminckx's solution, and balsam of tolu are employed for the same purpose.

Kaposi's naphthol formula is :

R	Naphtol.,	15 parts;	
	Sapon. virid.,	50 parts;	
	Cret. alb. pulv.,	10 parts;	
	Axung.,	100 parts.	M.

McCall Anderson much prefers, on account of its pleasant aroma :

R	Styracis liquid.,	f 3j;	30	
	Adipis,	3ij;	60	M.
	Melt and strain.			

or Schultze's modification of Pastav's formula :

R	Styracis liquid.,	f 3j;	30	
	Spts. rectificat.,	f 3ij;	8	
	Ol. olivæ,	f 3j;	4	M.
	Ft. liniment.			

Prognosis.—Scabies is a curable disease, even after persistence for long periods of time. When, however, complications exist, or severe eczema continues after the efficient action of a parasiticide, the patient may experience delay before attaining complete restoration to health.

DEMODEX FOLLICULORUM.

(STEATOZOÖN, OR ACARUS, FOLLICULORUM. *Ger.*, HAARSACKMILBE.)

This parasite was discovered in 1841 by Henle. It is a microscopic creature in the form of an elongated and jointed worm, with head separated from the thorax, and eight legs, four on each side, each leg with three articulations, and terminating in three small hooklets. The posterior extremity of the body is a vermiform appendage, terminating in a conical point (Fig. 98).

The demodex folliculorum is found long after birth upon the free surface of the integument, those parts of the skin particularly where the sebaceous glands are large, and on patients affected with acne or seborrhœa oleosa, as well as upon those free from all evidences of disease. It is encountered also in the substance of the comedo-plug, where at times from five to twenty may be discovered in a single follicle. A demodex, which is considered to be a variety of that discovered upon the skin of man, infests dogs, mice, and other lower animals; and may in the latter be the source of disease characterized by furuncular lesions, abscess, and even fatal results. None of these parasites is, however, known to be transmissible to man.

It has never been demonstrated to be an etiological factor in any disease of the skin, though De Amicis¹ and Majocchi² report cases of pigmentation of the skin due apparently to this parasite.

¹ Giorn. Ital. delle Malattie Veneree, e della Pelle, 1898, fascic iii.; also, Brit. Jour. of Derm., January, 1899.

² Ibid.

PULEX PENETRANS.

(RHYNCOPRION PENETRANS, SARCOPSYLLA WESTWOOD, NIGUA, CHIGOE, JIGGER, SAND-FLEA.)

The SAND-FLEA is a minute, brownish-red, egg-shaped parasite which penetrates the skin of man and of the lower animals, including rats and mice. It is encountered chiefly in tropical countries, but is said to exist in northern latitudes, even in some of the Southern States of the United States. Fecundated females only attack the skin, in man usually about the toes or near the nails, entrance being effected with scarcely painful pricking sensations. In the course of from five to ten days a painful œdema with pustulation follows, occasionally accompanied by lymphangitis or severer symptoms in the form of gangrenous abscesses. These sequels are said to result from distention of the ovary of the parasite, which may exceed fivefold the original dimensions of the insect.

The **Treatment** of the disease is by extraction of the flea with the aid of a heated needle, whereby it is simultaneously destroyed. The resulting wound may be cauterized or dressed antiseptically.

PULEX IRRITANS.

The FLEA which specially attacks man is a brownish-red insect having a laterally compressed body, an oral haustellum, serrated soft mandibles, a tongue sheathed in an inferior labium, and a pair of labial, four-jointed palpi. Each of the triple segments of the thorax bears a pair of five-jointed, double-clawed legs. The male is from 2 to 5 mm. in length and 1 to 2 mm. in breadth, the female being nearly twice that size. The female deposits her eggs in any fissure, crevice, fold of garment, or furniture which may be accessible, from which the larvæ are produced in a week. The nymphæ are enfolded in a cocoon, but only the mature insects prey upon man. According to Geber, the insect injects an irritating fluid into the skin at the moment of attack. The lesion it produces is a hemorrhagic punctum, followed by a transitory hyperæmia and a hemorrhagic exudation which may persist for a few hours.

The central punctum, or point, distinguishes the wound produced by the insect from macules of simple erythema; but care should be taken when fever is present to exclude the symptomatic erythemata. The site of the wound may become an urticarial wheal.

Mixed cases of flea-bites with wounds produced by bugs and lice are often seen in the lowest classes applying for relief to public charities; and the deeply pigmented skins they exhibit, often with purpuric lesions distributed over the lower extremities, and commingled with syphilitic eruptions, are in the highest degree confusing. The practi-

FIG. 98.



Demodex folliculorum.

tioner should always be on his guard in pronouncing on these cases, especially if the purpuric blotches occur in the cachectic or in those suffering from other diseases than those of the skin.

FILARIA MEDINENSIS.

(DRACUNCULUS MEDINENSIS, GUINEA-WORM.)

Symptoms.—The lesions due to invasion of the skin by the dracunculus *Medinensis* are first observed at the point where the worm is about to make exit, which point may be at a considerable distance from that where it entered, and the exit may be made after an interval of several weeks or months. This approach to the surface for the purpose of securing exit is accomplished only when the worm is quite mature. After some local sensation of tension or of itching, a pea-sized to small-nut-sized vesico-papule forms, superficial or subdermic in situation, which, after accidental or intentional rupture, gives exit to a clear serous fluid in which the uncolored head of the worm may be recognized. The head, which is surrounded by a quantity of leucocytes, appears either at once or in the course of a brief time, producing slow and sinuous movements by alternate contractions and elongations. The entire worm and its young may then wholly be extruded in the course of a week or more; or the head may be withdrawn and another swelling form at another part of the surface, the first meantime closing; or, in unskillfully managed cases, the worm may be torn so that the head only is removed, and then a severe lymphangitis with inflammatory, suppurative, and even gangrenous symptoms may supervene, producing, in fact, the train of symptoms now well recognized in connection with septicæmia. In some cases, however, the body may be discharged later than the head, after the mechanical separation of the latter, without serious consequences. The escape of embryos into the adjacent tissue is also regarded as a grave complication.

The chief sites of exit are the foot—particularly the heel—the leg, thigh, buttocks, scrotum, hands, trunk, neck, and face. There is usually but one worm in a single subject of the disease, but the number may be indefinitely large in persons exposed.

Etiology.—The disease is produced by the ingestion of water containing the larvæ of the parasite. Though denied, it seems highly probable that it may also obtain access by a traumatism inflicted at a date prior to that of invasion. The fact that nearly two-thirds of all cases occur in the foot is not without significance. Young filariæ have been seen penetrating the microscopic crustaceæ in fresh water, the later ingestion of which in drinking-water is supposed to be effective in the production of the disease.

The disorder due to the guinea-worm is endemic in India, Arabia, and Persia; it is also found in Egypt, Africa, and portions of South America, but with greater rarity.

Pathology.—The female alone invades the human body; it is a filiform and uniformly cylindrical body, from one-half to one metre long and two or three millimetres thick. The head is convex, with a central

oral orifice surrounded by four papillæ. It is viviparous, the embryos numbering millions, each embryo measuring 0.08 mm. in length and 0.0025 mm. in thickness, with a head somewhat thicker than the body, no buccal orifice, and a pointed tail. In from ten to a maximum of fifteen months the maturity of the female which has been impregnated is attained, and the parasite finds its way from muscles or other tissues in which she has been lodged or to which she has travelled to the surface of the body.

The **Diagnosis** (to be made in countries where the disease is endemic) is based upon the discovery of the worm.

Treatment.—The usual method of treatment by the natives of the countries named is to secure carefully the head when it appears, and to tease out the worm very gently day after day until the entire body is extracted, securing the accessible portion by winding it about a bit of stick or of paper. Continuous irrigation of the wound is both recommended and practised where the disease is common. Tincture of asafoetida has also been employed to destroy the parasite.

Manson,¹ who has given the subject much study, has entered a protest against winding out the guinea-worm, stating that at best this process merely shortens by a few days the duration of treatment in case the parasite is properly situated in the tissues without twists or turns, or if it has arrived at a stage of life when, having discharged its young, it is ready to come out spontaneously. If, as is often the case, the worm is twined and twisted among the tissues, and if she is still emitting her young, she will resist traction, a process which will often result in rupture. In consequence of rupture at this time myriads of young escape into the tissues, producing violent inflammation, which is frequently accompanied by secondary infection and possibly by sepsis. To determine if the worm is ready to come out spontaneously, the opening of the tumor may be douched for a number of minutes at a time, several times a day, by dripping cold water over it. When under the influence of this douching the worm no longer emits young careful winding out is not objectionable.

The treatment Manson recommends for trial in all cases is one first employed by a French naval surgeon, Émily. The swelling produced by the worm when she approaches the skin and before she has pierced it is injected in several places with a solution of mercuric chloride (1:1000). This kills the worm, which may be subsequently absorbed, or if cut down upon a day or two later her body can easily be withdrawn. In case the head of the worm be already protruding, the solution may be injected directly into her body, which is easily removed the following day. A number of cases have been treated in this way successfully, and with no disagreeable results in the way of pain or inflammation. This method also reduces the time of treatment from not less than four weeks to the much shorter period of four or five days.

The **Prognosis** is favorable, save in cases in which septicæmic symptoms develop as a consequence of coccogenous infection.

¹ Brit. Jour. of Derm., Feb., 1896.

CRAW-CRAW.

("PAPULOSE FILARIENNE.")

This rare affection was originally described in 1875 by Silva Arango. It has since been studied by Nielly,¹ O'Neill, Manson, and others.

It occurs only on the West Coast of Africa, chiefly among the negroes, in whom papules, vesicles, pustules, and vesico-pustules appear as single, multiple, and disseminated or grouped lesions accompanied with severe pruritus. The scratching of the affected part is excessive, and the crusting at times is a prominent feature of the disorder. As a whole, the disease assumes an inflammatory aspect and is superficial in situation. The regions involved are the arms, forearms, and hands, the feet and legs, and several portions of the trunk.

By removal of the crusts and erosion of the soft tissue beneath, it is said that in some cases the disease has been brought to an end. Other observers, after removal with a knife of the apex of selected lesions, have recognized a nematode filarial parasite, of the dimensions of $\frac{1}{125}$ by $\frac{1}{2500}$ of an inch, displaying two blackish points near its head which are said to distinguish it from *filaria Medinensis*. The parasite of crawl-crawl is apparently related to the latter, and is supposed to belong to the family *Anguillulidæ* or *Anguillulæ*, a class of parasites discovered in some portions of Europe among the lower animals.

CYSTICERCUS CELLULOSÆ CUTIS.

Cysticerci have been recognized in the skin and subcutaneous tissues by Rokitansky, Lewin, Guttmann, Schiff, Férréol, Duguet, and other observers. In these cases one or many oval or roundish, firm, elastic, cutaneous or subcutaneous, pea- to walnut-sized tumors, isolated or disseminated, unproductive of pain, project from the general level, and are enveloped by an unaltered integument. They occur upon the trunk and the extremities. They remain in this condition without change for years; and may accompany cysticerci of the brain and other portions of the body, productive of the serious disturbance of the economy which such invasion may determine. If the skin-tumors be opened and their contents examined, the parasite (which is the scolex or hydatid of *tænia solium*) will be recognized as an ampulliform sac, with a cephalic appendage, reëntrant or projecting, and provided with four suckers and a coronal of hooklets. By no external characteristics could such tumors be distinguished from others of similar size and external appearance. Only in the rare cases of nervous complication could a suspicion arise based upon the real character of the disorder. Respecting this matter, however, the diagnostician is in no worse position than when called upon to recognize cysticerci of the viscera. Cysticerci of the liver are distinguished during life, and subsequently removed by operative procedures.

The **Diagnosis** is from gumma, lipoma, epithelioma, and sarcoma. The first occurs only in the syphilitic; the second has a peculiarly uneven surface and firm feeling; the third is largely facial in situation; and the last is of a malignant character and relatively rapid career.

¹ Bull. de l'Acad. de Méd. de Paris, 1882, p. 395.

ECHINOCOCCUS.

Weyl and Geber state that the parasite, *echinococcus* (larva or hydatid of the *tænia echinococcus* of the dog), not mentioned in dermatological treatises, is found in the human skin. Of 336 cases reported by Davaine, the parasite occurred thirty times in muscular and subcutaneous tissues, more often in women than in men. The softish, fluctuating tumors or vesicles produce a disagreeable sensation of tension, and they undergo fatty or other metamorphosis after the death of the encapsulated parasite, that usually occurs in from one to two years. Exploration of the superficially seated fluctuating tumor, covered with unaltered integument, usually demonstrates its nature.

DISTOMA HEPATICUM.

Küchenmeister¹ reports three instances in which the embryos of the large liver-fluke were encapsulated in subcutaneous tissue. The tumors were painful or painless, and occurred on the head, trunk, and extremities.

LEPTUS.

(LEPTUS AUTUMNALIS, HARVEST-BUG, MOWER'S MITE.
Fr., ROUGET.)

The *leptus* (Figs. 100 and 101) is a minute, reddish or yellowish-red insect of the family *Trombidæ*, visible to the naked eye, and found in summer and autumn clinging to bushes and grasses. It is found both in America and in Europe. It attacks man only after its accidental location upon the skin, where it perishes in the course of a few hours. In such situations, however, it induces considerable irritation, betrayed in erythematous, urticarial, papular, and even eczematous symptoms, accompanied by pruritus of various grades. The parts chiefly affected are the ankles, legs, arms, and feet. The mite may be seen in the skin as an orange-reddish or brick-reddish point, which represents often the body of the insect, its head being buried in the aperture of a follicle beneath. Examined after extraction, it is seen to have a relatively large cephalic extremity. It has a short, cylindrical, and conical haustellum, composed of fused double maxillæ; and two strong, hooked, five-jointed palpi, which can be rolled up. There are also two hatchet-like mandibles. It has a well-rounded or oval body 0.3558 mm. long and 0.32 mm. broad, provided with three pairs of legs. It is found upon the lower limbs, and also upon the scalp and every other part of the body. According to Duhring, children are especially liable to its encroachments. The disorder is relieved by the application of balsam of Peru in olive-oil, carbolated oil, spirit of camphor, or other mild stimulant or parasiticide.

There are several species of *leptus* (*leptus Americanus*, *leptus irritans*) and other insects living on shrubs and grasses that, especially in the months of July and August, attack the human skin.

¹ Loc. cit.

The *Leptus Americanus* (*krithoptes monunguiculosus*; Fig. 99) is named by Weyl and Geber as the larva of a mite that annoys laborers in barley. It is yellowish white, oblong or oval in form, averaging

FIG. 99.



Leptus Americanus.

0.022 mm. in length. There is a protrudible tubular haustellum, enclosed by serrated mandibles. On each side are five-jointed palpi. There are four pairs of feet—two on the cephalo-thorax; two, abdominal in situation—all articulated to the epimeres. The tarsus of the

FIG. 100.



Leptus. (After KÜCHENMEISTER.)

FIG. 101.



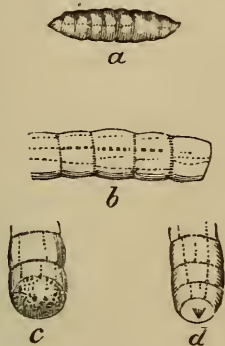
Rouget.

first part terminates in hooked claws; the others have haustellum disks on stems. Between the first and second pairs are swinging clubs, indicating the larval condition.

Dipterous Larvæ in and beneath the Human Skin.

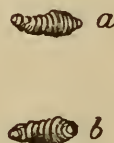
There is no dipterous insect peculiar to man alone, but a number of cases are on record in which the ova of several species of *æstrus* have been deposited in the skin, and larvæ subsequently been formed. The *æstrus bovis*, or gad-fly, in the most common of these. Usually, after the ova are deposited by the insect, a painful swelling occurs which may change from one point to another. When suppuration is induced the larvæ can be removed by pressure upon the boil. Walter Smith,¹ of Dublin, has described such a case in which the swelling upon the ankle of a girl, twelve years old, moved to the elbow, and there discharged a white grub nearly an inch in length. Birdsall² described a

FIG. 102.



Æstrus: *a*, the larva, natural size; *b*, some of the segments seen under a lens, and showing the lines of minute projection; *c* and *d*, the terminal ends of the insect. (After ABRAHAM.)

FIG. 103.



Larvæ removed from the body of a child. Of the exact size, after several days in alcohol: *a*, as seen from side; *b*, as seen from beneath.

specimen sent him from Gaboon, on the West Coast of Africa, in which two worms escaped from between the middle and the ring fingers of one hand; another workman having had a similar accident occur upon the leg. The fly the ova of which had been deposited in these two cases was said to attack the gorilla; and members of a native tribe engaged in capturing these animals were reported as being commonly troubled in the same way. The worms sent to Birdsall were respectively one-fourth and one-half of an inch in length and about one-eighth of an inch in thickness.

Abraham, of Dublin, also examined and reported upon a similar case, the specimen having been sent to the editor of the *London Medical Press and Circular*, from Portsalon, Letterkenny.

Several specimens illustrating these accidents have been sent to the authors. The larvæ represented in Fig. 103 were removed from the body of an infant in Nebraska. The *muscidæ* (flesh, house, stable, dung, and other flies) have unarmed maxillæ, and are unable to wound the uninjured skin. The pregnant female seeks, therefore, to deposit her ova where the larvæ, equally unprovided with developed jaws, can most readily secure nutriment. Hence, open wounds and the tender skins of newborn infants when exposed in the summer season, are liable to become the depots of such ova.

¹ See Report of Internat. Med. Congress, Arch. of Derm., January, 1882.

² N. Y. Med. Record, March 18, 1882, p. 298.

The ova of other species of *muscidæ* and *œstridæ* (according to Geber, of the former, *Lucilia Cæsar*, in America; *Stomoxis Calcitrans*, in Africa; and *Sarcophila Wohlfarti*, in Russia; of the latter, *Dermatobia Noxalis*, *Cuterebra*, and *Hypoderma*) are occasionally found in the skin and subcutaneous tissue. Severe cases are reported from Texas, in which larvæ were expelled in great number from the nares after inhalation of chloroform.

IXODES.

(WOOD-TICK.)

Several species of tick are recognized, such as the *RHIPICEPHALUS ANNULATUS* (cattle-tick), *AMBLYOMMA AMERICANUS*, *IXODES UNIPUNCTATUS*, and *IXODES RICINUS* (wood-beetle), the last named being more common in Europe. In America wood-ticks are found in wooded districts, especially where pine- and fir-trees are growing. The female attacks the human skin by thrusting into it her beak, armed on either side with a maxillo-labial projection having recurved hooklets, the mandibles also presenting similar obstacles to the forcible extraction of the head. After suction of the blood from beneath, the body of the tick swells to the size of that of a pea or small bean, and may remain for several days in this position. At such times the parasite may be mistaken for a small pedunculated tumor. Forcible attempts at extraction of the intruder are liable to detach the mandibles from the body, and thus leave them as the source of future irritation and even disagreeable inflammatory symptoms in the site of the punctured wound. On applying over the tick a drop of spirit of turpentine or benzine the head is spontaneously retracted and the body falls from its position. Soldiers on the plains of the United States accomplish the same end with the juice of tobacco. The sensation produced at the moment of the insertion of the beak of the insect is said to be so trifling as often to pass unnoticed.

PEDICULOSIS.

(Lat. *pediculus*, a little foot.)

(PHITHEIRIASIS, MORBUS PEDICULOSIS, LOUSINESS.)

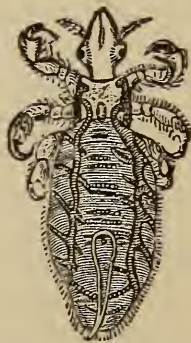
Symptoms.—Lice belong to the order *Rhynchotta*; subdivision *Parasitæ*; family, *Pediculidæ*. They are apterous, provided each with two eyes, and have an oral appendage capable of both inflicting wounds and producing suction. The lice infesting the human body are recognized as belonging to three varieties, those of the head, of the body, and of the pubes. Of the disorders to which they give rise, it may be said in general that the lesions presented differ according to the region invaded, to the multiplicity of the intruders, and to the length of time during which their ravages have been inflicted. Such lesions, however, are those which have been already studied in connection with eczema, urticaria, and the similar disorders resulting from external irritation. Their special peculiarities in pediculosis are owing solely to the nature of the exciting cause and to the mode of its operation.

Pediculosis Capillitii.

(PARASITE, THE HEAD-LOUSE.)

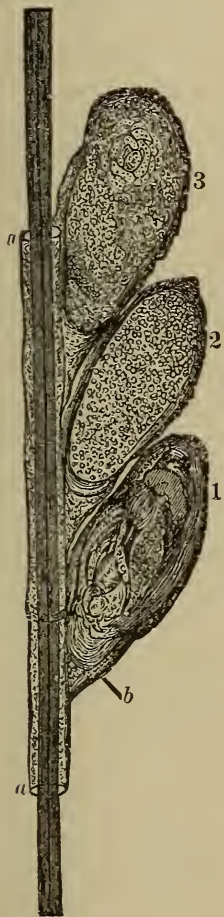
The head-louse (Fig. 104) is usually of a grayish color, but differs slightly with the hue of the hair on the part which it frequents. Its head presents indistinctly the outline of a trefoil, and is provided with two hairy antennæ (each of five articulations) and with two eyes. Its thorax is relatively narrow, with six tracheal stigmata and three hairy legs on either side, the legs being provided with tarsal hooklets. The abdomen is divided into seven segments, defined by blackish indentations on either side. The males are fewer and smaller than the females, and they present

FIG. 104.



Pediculus capillitii—male.
(After KÜCHENMEISTER.)

FIG. 105.



Ova of head-louse attached to hair: 1, 2, 3, ova; a, a, chitinous cylinder surrounding a pilary filament; b, chitinous sheath of nearly mature ovum. (After KAPOSI.)

upon the dorsum an anogenital orifice and a large conoidal penis and testes. The females are provided with ovaries and with an anal aperture in the terminal abdominal segment. Coupling is performed with the male beneath.

The ova or "nits" (Fig. 105) are whitish bodies of oval contour, that are glued to the hairs by a cylindriform sheath of chitin which completely encases each filament. They are deposited in series, as the female traverses the hair from its insertion to its distal extremity, so that the oldest are in general the nearest to the scalp. The young escape from the ova in from three to eight days, and arrive at maturity in from eighteen to twenty days. A single female, according to Kaposi, can lay fifty eggs in six days, and thus in eight weeks have a progeny of five thousand lice.

Head-lice usually limit their habitat to the scalp, though, rarely, in elderly men with long hair reaching to a full beard, they may encroach upon the latter. They infest every portion of the scalp, but find the region of the greatest protection upon the occiput. They are found upon children and adults of both sexes, but are best furnished with lodgement upon the scalps of girls and of women covered with long and luxuriant hair. The lesions observed upon a scalp thus inhabited vary according to the age and vigor of the colony. They are few or numerous,

discrete or confluent pustules or bullæ; the surfaces are excoriated by scratching and oozing with serum, pus, or blood; the crust varying

in character according to the nature of the desiccated exudate and sebaceous matters. Often the picture presented is a conglomerate of an artificial eczema and seborrhœa.

The ova, or "nits," are usually abundant upon the hairs of an infested head, and will scarcely escape the attention of a close observer. They are not to be mistaken for the exfoliated, epithelial, and fatty plates seen in seborrhœa sicca, disseminated among the hairs and often perforated by hairy filaments, since the former are firmly glued in position and resist the bristles of the hair-brush. The peculiarly nauseating odor of the louse-infested, pustule- and crust-covered scalp is not to be confounded with that due to favus of the same region.

In aggravated cases the post-cervical ganglia express, by their increase in size, the degree to which the local irritation has been pushed. The itching is usually severe, and in cases of long persistence in children may produce the usual systemic symptoms of prolonged local irritation. Children and patients of impoverished health and with poor hygienic surroundings are believed to exhibit the disease in severer grades than others; but this, if indeed a fact, must at least in part be due rather to the more favorable conditions for development and multiplication of the parasites that are presented in filth-accumulation and lack of cleanliness. In the public charities of large cities children affected with pediculosis capillitii are presented every week who come from the lowest social grades of the population and from the filthiest quarters. In these children it is not observed that the general health of the patients is a factor in the severity of the affection.

The **Diagnosis** of pediculosis capillitii is a matter of importance however simple of accomplishment, since many cases of supposed "pustular eczema of the scalp" have vainly been treated by one physician with internal remedies addressed to the systemic vice assumed to be responsible for the disease which another has relieved after the discovery of a few head-lice. The hairs should always be raised and separated, the scalp carefully be inspected, and the presence of any parasites, and especially ova or "nits" fastened to the hairs, be ascertained. Whether the lice have preceded or followed the eczematous state (and each of these conditions may be noted) is a matter of minor importance. Pustules about the nares and lips, especially of young girls, are often significant of pediculi of the occipital region, the lesions being due to picking and scratching the face under an impulse to relieve pruritic sensations of the scalp induced by the presence there of lice.

Treatment.—The indications in the treatment of pediculosis capillitii are the destruction of all parasites with their ova, and the relief of the induced inflammatory condition of the scalp. Generally, removal of the former is followed by spontaneous disappearance of the latter. For the destruction of the lice the most popular remedy in the United States is petroleum (not kerosene), pure or with equal parts of balsam of Peru (which gives it an agreeable odor), poured over the scalp in quantity sufficient to cover it without overflow upon the brow, temples, and neck. It should be rubbed in with a piece of white (undyed) flannel. At the end of from twelve to twenty-four hours the

lice are destroyed, and the ova are rendered incapable of development. This treatment is followed by a thorough shampoo with tincture of green soap, or with toilet-soap and hot water; after this operation the scalp may require a bland unguent, such as vaselin, or a small quantity of scented castor-oil, either pure or in combination with spirit of wine. Kaposi employs petroleum as a parasiticide in combination with olive-oil and balsam of Peru: 5 parts of the first, $2\frac{1}{2}$ parts of the second, and 1 part of the third. Cutting the hair of women and children is unnecessary, as patience and gentleness with the use of the comb will disentangle the most matted masses after the lice have been destroyed. Other remedies are employed locally for a similar purpose, of which the most popular are staphysagria, 1 drachm (4.) of the powdered seeds to the ounce (30.) of vaselin, but especially in decoction; tincture of cocculus indicus; carbolic acid in oil or water; sabadilla; the ethereal oils; and mercurials in ointment and solution, including the mercuric oleates. In cases in which but a few parasites have found their way to the scalp, and that recently, nothing more is requisite than careful use of a fine-tooth comb, scrubbing the scalp with a strongly scented alcoholic perfume, and final bathing with soap and hot water.

The ova adhering firmly to the hairs can be removed by soda or borax lotions, alcoholic solutions, or dilute acetic acid, which are solvents for the gluey material by which the "nits" are secured in place.

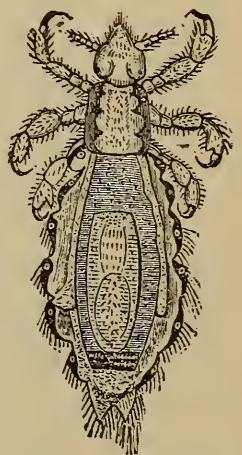
Pediculosis Corporis.

(PEDICULOSIS VESTIMENTI. PARASITE, THE BODY-LOUSE.)

The parasite in this disorder inhabits exclusively the clothing worn next the body. In anatomical peculiarities it resembles the pediculus capillitii already described, being, however, larger in size, the females also larger than the males. The thorax is separated from the abdomen, the latter being hairy, yellowish at the margins, and provided with eight segments. The eyes are black and very prominent in both sexes; and the periods requisite for the maturing of the ova and young are those named respectively in connection with head-lice. In color they vary from a dirty white to a light-grayish hue when undistended with blood. In the reverse of this last-named condition they may be recognized as having a dull-reddish or a purplish color, when they are also more indolent in their movements. They measure from 2 to 3 mm. in length and 1 to 1.5 mm. in breadth. The female lays from seventy to eighty eggs, from which the young are produced in from three to eight days, and are capable of reproduction in a fortnight more.

They inhabit the seams of undergarments, where their ova are also deposited; but in coarse woollen or flannel shirts they find sufficient shelter in the meshes of the material of which the clothing is made; this they leave temporarily, solely for the purpose of obtaining nutriment from the

FIG. 106.



Pediculus corporis—female. (After KÜCHENMEISTER.)

skin of their host, and hence are not recognized upon the free surface of the integument. Upon rapid removal of the clothing of an infested individual a few lice may occasionally be encountered, hastily seeking a place of refuge, though this is rather the exception to the rule. It thus may happen that a louse-bitten patient will not exhibit the source of his trouble to his physician after a recent and complete change of clothing. The greater then the importance of being able to recognize the clinical features of the malady in the absence of the parasite. This recognition is comparatively easy to one who has made himself familiar with the symptoms of the disorder.

The manner in which the louse is enabled to supply itself with the blood of man has been studied by Swammerdam, Landois, Schjödte, and Tilbury Fox. The last-named author has summarized the observations of the others, and the results he gives may briefly be described as follows:

Swammerdam's original view that the louse is not provided with mandibles by which it can inflict a wound, but with a *haustellum* by which the blood is sucked up to the head of the parasite, is confirmed by Schjödte. This observer, examining the head of the louse from behind with reflected light, discovered that the parts of the head resembling mandibles in appearance were really situated beneath its skin. He applied to the integument lice which previously had been starved, and watched each as, with retracted limbs, arched back, and head inclined obliquely downward, it repeatedly projected forward and retracted through the extreme end of its head a "small, dark, narrow organ," by which it was firmly held in place. A triangular blood-red point soon became visible in front of the eyes, rapidly and alternately contracting and dilating, and followed by energetic peristalsis of the gastro-intestinal tract. If the head then be cut off in front of the eyes, and the *haustellum* carefully be extracted, the latter can be recognized as a brownish protrusion, armed with terminal recurved hooks, from which depends a delicate membranous tube varying in length. "It seems that the mouth is like that in the *rhyncotta* generally, but differs in the circumstance that the labium is capable of being retracted into the upper part of the head, and has a fold in it when so retracted. In order to strengthen this part, a flat band of chitin is placed on the under surface; and it is thinner in the middle in order that it may bend and fold a little when the skin is not extended by the lower lip. The latter consists of two hard lateral pieces, of which the fore-ends are united by a membrane, so that they form a tube, of which the internal covering is a continuation of the elastic membrane on the top of the head. Inside its orifice are a number of small hooks, which assume different positions according to the degree of the protrusion; and if this be pushed to its highest point, they form a collar of hooks curved backward like barbs. The pediculus first inserts its labium into a sweat-pore and protrudes the lip. When the hook is securely attached to the parts around then the first pair of *setæ* (the real mandibles transformed) are protruded, and these are toward the point invested by a membrane so as to form a closed tube, from which again is exerted a second pair of *setæ* or maxillæ, which form a tube and end in four

small lobes placed crosswise. The whole forms a membranous tube, along the walls of which retiform mandibles and maxillæ are placed as long, narrow bands of chitin. This tube can be lengthened or shortened at pleasure."

This explanation of the mode in which the louse attacks the skin is probably true of each of the varieties which infest the human body. Fox well suggests that the invaded follicle, after the withdrawal of the haustellum, becomes the seat of a circumscribed hemorrhage. None of the anatomical peculiarities described above, however, completely explains the characteristic pruritus of pediculosis corporis, for it can scarcely be questioned that it is not merely at the moment of attack or penetration that the suffering of the victim is greatest. The pruritic condition of the louse-wound persists, indeed usually attains its maximum, after withdrawal of the pediculus, and is without doubt greater than that awakened by merely mechanical puncture of the epidermis. Anyone who will compare the skin of a louse-infested patient with that of one who has been subjected to the acupuncture process employed among the lower classes of Germans, and by them known as "baunscheidtismus," can convince himself of this fact.

The lesions seen on the skin thus invaded are proportioned, as in pediculosis capillitii, to the size and age of the colony of parasites. Excoriations, usually linear, occasionally circumscribed, varying in depth and length, radiate irregularly from each louse-wound, and they may be commingled with minute papules, transitory wheals, or, in rare, aggravated cases, with the typical signs of diffuse eczema. All are produced by scratching in order to relieve the pruritus. Crusts, often composed of desiccated blood, rarely of serum or pus, minute and capping the wounded follicle, or linear and coextensive with the excoriations produced by scratching, are generally conspicuous. In older cases these lesions are followed by the usual sequel, pigmentation, the latter being a partial indication of lousiness which has long been tolerated.

In America it is rare to note the severe and intense forms of the malady, resulting from long-continued neglect of the skin, that occur in Germany. In these cases follow: dermatitis, rupioid crusts, furuncles, abscesses, carbuncles, and ulcers, resulting in serious implication of the skin which may persist for weeks after the clothing has been freed from lice, and finally leave a deep-tinted, diffuse pigmentation of the skin-surface, suggesting that of the negro or of the patient affected with Addison's disease.

The **Diagnosis** is a matter of importance. Patients will visit physicians, claiming that they have suffered from a "humor of the blood," who have been swallowing drugs for a long period of time, in the vain hope of obtaining relief, with lice, at the very moment of uttering the complaint, crawling over their persons. Even those of good social position and cleanly habits will occasionally suffer after accidental contacts in the tram-car or railway-carriage, the hotel, the theatre, or other places of public resort. There are certain points to be carefully noted in this connection. Excoriations over the nucha, about the shoulders, loins, buttocks, and external faces of the thighs, all visible at the same time, are highly suspicious symptoms; as an

eczema, when equally diffuse, is sure to be accompanied at some point by perfectly classical features ; and generalized pruritus is exceedingly rare, its localized varieties concerning chiefly the regions about the mucous outlets of the body. There is a picture highly suggestive of pediculosis exposed to the eye when the trunk of an infested patient is viewed from behind. The lesions are more discrete, more irregularly distributed, and more intermingled with long scratch-marks, reaching, for example, quite over the point of one shoulder, than in most disorders with which pediculosis vestimenti could be confounded. Here and there minute blood-specks tell a significant tale. When clinical patients exhibit syphilodermata interspersed among characteristic lesions of pediculosis corporis the students themselves in such cases can ordinarily point out the particular symptoms referable to the separate disorders present.

In private practice it is usually advisable, for obvious reasons, to secure the *corpus delicti* before informing the sufferer of the nature of his or her complaint. In the case of male patients it is well to take a position in the rear, and when the underclothing is drawn well up from the shoulders a careful scrutiny of it may be made while the applicant for relief supposes that attention is directed instead to his person.

The **Treatment** of the disorder concerns largely the clothing. The latter requires immersion in boiling water, or it may be wrapped in paper and subjected to a temperature in an oven (160° – 175° F.) sufficient to destroy the lice and their ova. In case of recurrence of the malady the clothing is to be again subjected to the same process. Usually the resulting irritation of the skin promptly subsides. When several members of one family suffer all clothing worn must be subjected to similar treatment. If the skin has been unusually tormented by scratching, warm alkaline baths will afford some comfort, and they may be followed by a bland unguent or by one of the dusting-powders. For immediate use, before the clothing can be rid of the intruders, a small cheesecloth bag containing sulphur in stick or in powder may be worn beneath the underclothing, or the powder may be dusted in the clothing and rubbed over the body ; or a parasiticide ointment may be ordered as recommended by Duhring, prepared by adding 2 drachms (8.) of freshly powdered staphysagria to the ounce (30.) of hot lard, strained and cooled. The surface of the skin may also be anointed with carbolic acid dissolved in oil or in water.

Pediculosis Pubis.

(CRAB-LOUSE. PARASITE, THE PUBIC LOUSE. *Fr.*, MORPION.)

In this disorder the genital region is chiefly involved, though in exceptional cases all the hairy portions of the skin may be invaded, including the eyebrows, the eyelashes, the axillæ, and the moustache and beard, the hairy chest, and the hairy legs of men. The body of the pubic louse (Fig. 107) is smaller than either of those described above. Its head is also attached more closely to its thorax, having a shape which is compared with that of a violin. The thorax is not

distinctly separated from the abdomen, and of the six stout legs with which the louse is provided, the second and third pairs are conspicuously powerful and armed with relatively large hooks at the tarsal extremity. The resemblance of the latter to the claws of a crab has given to this creature the common name of "crab-louse." The lateral abdominal indentations are much less distinct than in the other varieties; and the blackish marginal marks of body- and head-lice are here scarcely apparent. The abdomen is also much elongated, having a more rounded contour. The pubic louse is provided on its lateral borders with eight short conical feet, terminating in bristles. It is also distinguished from the others of its family by the length of its anal bristles and by the peculiar shield-shaped carapace which covers nearly one-half of the dorsum. The male is from 0.8 to 1 mm. long, and from 0.5 to 0.7 mm. wide, being thus from 1 to 1.5 mm. smaller than the female.

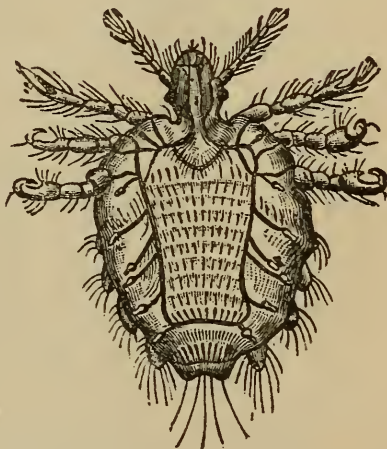
The pubic louse is much more inactive than the others, and does not ordinarily escape its pursuer. It buries its head deeply in a follicular orifice, and steadies itself in this position, where it may remain for some time, by grasping the adjacent hairs with its short and powerful claws. A moderate degree of force is required for its dislodgement from this favorite position, and when removed its grasp of the hair to which it clings is so firm that the latter usually slides for its entire length through the claw of the louse. Occasionally it may be found creeping over the skin or clinging to hairs at a distance from the skin-surface. The pyriform ova are smaller than those of the head-louse, though having a similar color, and are, like the latter, attached to the hairs by a firm chitinous glue.

Pubic lice are usually acquired during the contacts incidental to the sexual act; are, hence, more frequently encountered among adults; but may, without question, be transmitted mediately by occupation of beds and covering which have been used by infested persons. They are thus, though rarely, found in children of both sexes.

The lesions induced are those produced by the wounds inflicted by the parasites and by constant scratching, though these are rarely severe. In a few cases one may see a severe eczema follow the ravages of the lice, but in such event the complication is chiefly owing to unnecessarily severe self-treatment of the disorder, patients, being often morbidly anxious in their efforts to rid themselves of the pests.

The **Diagnosis** of pediculosis pubis is between eczema and pruritus genitalium. The disease last named is, in both sexes, accompanied by itching, and that often of intense grade; but when this is diffuse and symmetrical in distribution it is not limited particularly to the hairy parts. Eczema of the genitals is not often produced by parasites of that region, and it may readily be recognized by its characteristic fea-

FIG. 107.



Pediculus pubis. (After SCHMARDA.)

tures. Both disorders are often, indeed, limited to symmetrical patches upon the side of the scrotum or one labium. The discovery of the parasite, however, in pediculosis pubis is always essential, and requires merely careful inspection and a good light. The lice may be recognized either at or near the point of implantation of the hairs, which also display ova except in very recently infested individuals. The reddish excrement of the parasites mingled with scratch-marks and excoriated papules of small size may also be observed. Patients are often made aware of their condition by a sensation of crawling over the parts. Scratching of the pubic region in adults of both sexes should awaken suspicion of the disorder.

Treatment.—The disease is commonly treated by the topical application of mercurial ointment, which is a disagreeable and rather filthy medicament for this locality. The 10 per cent. oleate may be substituted for it, or, even preferably, corrosive sublimate in solution, from 3 to 4 grains (0.2–0.268) to the ounce (30.). Petroleum and olive-oil with balsam of Peru, in the proportions given above in connection with the subject of pediculosis capillitii, are an effective combination. Staphysagria, carbolic acid, cocculus indicus, or one of the other substances used in the disorders occasioned by the animal parasites, may be substituted if desired. It is usually better to defer bathing until the remedy selected for the destruction of the lice has been applied on several occasions, after which a warm water-and-soap ablution will commonly end the trouble. It is needless to clip the pubic hairs. Should an eczematous disorder remain, it requires appropriate treatment, including hot bathing and the blander lotions and unguents.

VAGABONDS' DISEASE.—This is a term given to the condition of the skin recognized among tramps, inmates of poorhouses, and the filthy and neglected in general. The skin of such persons is often densely indurated, harsh, dry, and deeply pigmented, in consequence of much scratching and a consequent hyperæmia. This condition is produced chiefly by phtheiriasis; but is often a resultant of the incursions of several parasites, including those of the bed and of the clothing. It is also a consequence of persistent neglect of the bath.

PEDICULI AND ACARI TRANSFERRED TO MAN FROM THE LOWER ANIMALS rarely thrive in such uncongenial soil, but as a matter of exception they occasionally survive such transfer. Thus Goldsmith,¹ of Vermont, reports the case of a woman affected with intense pruritus, who after sweating profusely observed numbers of pigeon- or hen-lice emerging from the sweat-pores. Mégnin² reports similar cases under the title PRURIGO DERMANYSSIQUE, the *dermanyssus avium*, or *gallinæ*, being the acarus infesting domesticated fowls. The disorder is said to be at times epidemic in the vicinity of aviaries and pigeon-cotes, but is always of trifling severity.

¹ Louisville Med. News, December 31, 1881, p. 320.

² Les parasites et les maladies parasitaires chez l'homme, les animaux domestiques, etc. Paris, 1880.

CIMEX LECTULARIUS.

(ACANTHIA LECTULARIA, BUGS, BEDBUGS.)

Strictly speaking, the bedbug is not a parasite of man, but finds its congenial habitat in the bed, bedding, and bed-covering, and the walls and floors of apartments occupied by persons of both sexes and all ages. It infests also furniture, including chairs, sofas, and the cushions of seats occupied in public vehicles and hotels. From the cracks, crevices, seams, folds, or other protected points where it has found lodgement, it emerges usually at night, for the purpose of securing its nutriment in the blood of its victims. It is a pest as ancient as the day in which Dioscorides wrote.

This insect has a rusty or reddish color, this differing slightly according as it is or is not distended with blood. It is an apterous member of the order CIMICIDÆ. It is provided with a blunt-pointed head, broadly attached to the thorax; two long, slender antennæ; and a three-jointed haustellum capable of projection and retraction beneath the head. There are three pairs of long, slender legs by which it is enabled to accomplish rapid movements. The abdomen is broad and flattened, and oval in shape, with nine segments. The parasite emits a disgusting odor, which is much more distinct when it is crushed.

The wound inflicted by this bug is accomplished with or without the consciousness of its victim, who in the former case is made aware of a transitory prick or sting. Soon after, decidedly pruritic, burning, or stinging sensations are experienced, and the wound becomes the seat of an urticarial wheal. The lesion then, examined soon after the infliction of the wound, is seen to be small pea- to bean-sized, and in the form of an elevated and circumscribed "button" or papulo-tubercle, either whitish in the centre or exhibiting there also the hyperæmia which distinguishes its peripheral zone. After the lesion has begun to subside and lose its acute features, which may not occur for several hours if it be irritated by rubbing or scratching, a minute reddish punctum may be seen marking the original site of the wound.

The lesions are usually multiple even when but a single assailant has been present, the insect taking apparent delight in obtaining its nutriment from several distinct points upon one surface. In this way at times its course upon the integument may for a short distance be traced. In cases in which the pests are numerous, as in filthy dwellings, prisons, ships, and barracks, and when infants have been attacked, the resulting eruption is often greatly masked by the scratching and resulting excoriations of the skin-surface. In this way vesicles, pustules, crusts, purpuric blotches, and even skin-infiltrations may be found, instead of the rosy or light-reddish typical wheals of recent cases in patients with fair, clean skins.

The **Diagnosis** is a matter of importance, and upon it may hang a professional reputation. Physicians are often consulted respecting these lesions by patients who believe themselves to be suffering from "hives," "humors," exanthemata, and even from syphilis. The insect attacks

the parts of the body to which access is easy as the patient sits or reclines on the back or side, including the buttocks, the thighs, the shoulders, the loins, and the neck, in that order of frequency, rather more largely than the legs, much less frequently the scalp, the face, and the genitalia. The eruption is not to be confounded with urticaria *ab ingestis*, which is more apt to be symmetrical in disposition.

Treatment.—The eruption is best relieved by the topical application of spirit of camphor, alcohol, weak carbolated lotions, or solutions of boric acid, 1 drachm to the pint (5. to 500.) Untreated, it disappears spontaneously when the source of the disorder is removed. The most effective treatment is by prophylaxis, with soap, corrosive sublimate solutions in alcohol, and hot water employed over all accessories of the dwelling-house inhabited by the insects. Once discovered to be present, infested furniture should be scrubbed in all its crevices with a saturated solution of corrosive sublimate in alcohol, and bed-clothing be immersed in boiling water.

CULEX PIPIENS, Etc.

Other insects which may persistently or only occasionally attack the human skin are: the mosquito and gnat (*CULEX PIPIENS*); midges (*SIMULIA*); bees (*APES MELLIFERÆ*); and wasps (*VESPIDÆ*). They produce by their bites or stings various cutaneous lesions, including urticarial wheals, papules, ecchymoses, and in rare cases even ecchymomata. The lesions produced by the flea are found more often on the legs, the neck, or other covered portions of the body. Those of the midge and mosquito are seen on the face, the hands, and exposed parts; though, when numerous and voracious, these insects will penetrate the clothing for the purpose of obtaining blood. Severe eruptive lesions are often seen in America on the faces and extremities of infants and children exposed during the night to the incursions of these marauders. The skin-symptoms are usually treated locally by aqua ammoniæ or spirit of camphor.

The bodies of immigrants newly arrived during the summer season in America, from countries where the mosquito is either rare or does not exist, often present singular and even formidable evidences of the attacks of these insects. The skin, unaccustomed to such depredations and quite unprotected, will often be found greatly swollen, and of a light-reddish hue suggestive of erysipelas. Here and there bullæ are conspicuous, which add to the resemblance to the last-named disease. The features, in consequence of the tumefaction, vesiculation, and papulation, may be so swollen as to present a conspicuous deformity; and the fore-arms, and even the arms, seem greatly increased in size from the same cause. The feet and legs also may, in the unconsciousness of sleep, be exposed in hot weather to the depredations of these marauders, and in the same way the back, the buttocks, and, rarely, even the genitalia may present the same signs of inflammation. The matter of chief moment is the correct diagnosis of such cases, as many patients seeking relief under such circumstances have been treated for disorders with which they were not affected.

PROTOZOA AND SPOROZOA.

The relations sustained by some forms of protozoa to diseases of the skin and of other organs in man are as yet undetermined. The so-called psorosperms observed by a number of investigators in Darier's disease, carcinoma, molluscum fibrosum, Paget's disease, herpes zoster, and varicella have been demonstrated clearly to be bodies produced by cell-transformation. It is well known, however, that the livers and other organs of rabbits and of some other animals often contain coccidia (a subclass of sporozoa), and several instances of peculiar forms of disease in man have been reported in which protozoa were satisfactorily demonstrated. Psorospermiosis of internal organs of man is described by Osler¹ and by Blanchard.²

Cases of protozoan infection of the skin and other organs are reported by Wernicke,³ Rixford and Gilchrist, Psodas,⁴ and D. W. Montgomery.⁵ In one case the course of the disease was chronic, and the cutaneous lesions were almost identical clinically and histologically with some of the verrucous types of tuberculosis. The patient died finally of a general infection which was in every way similar to a tubercular infection, but careful search failed to reveal tubercle-bacilli, while protozoa were found in great numbers in lesions of the skin and of other organs. Successful, though not entirely satisfactory, inoculations were made on rabbits and dogs. The protozoa and the histology of the lesions in the cases have been studied by Gilchrist, who has published the results of his labors in the *Johns Hopkins Hospital Reports*, vol. i., 1896. This report contains also "Comparisons of Two Varieties of Protozoa and the Blastomyces with the so-called Parasites in Certain Lesions of the Skin," with a full bibliography.

Recent studies have shown that under certain conditions blastomyces multiply by sporulation. This fact removes one of the chief reasons for making a distinction between blastomycotic and protozoic infection of the skin. (Cf. Chapter on Blastomycosis.)

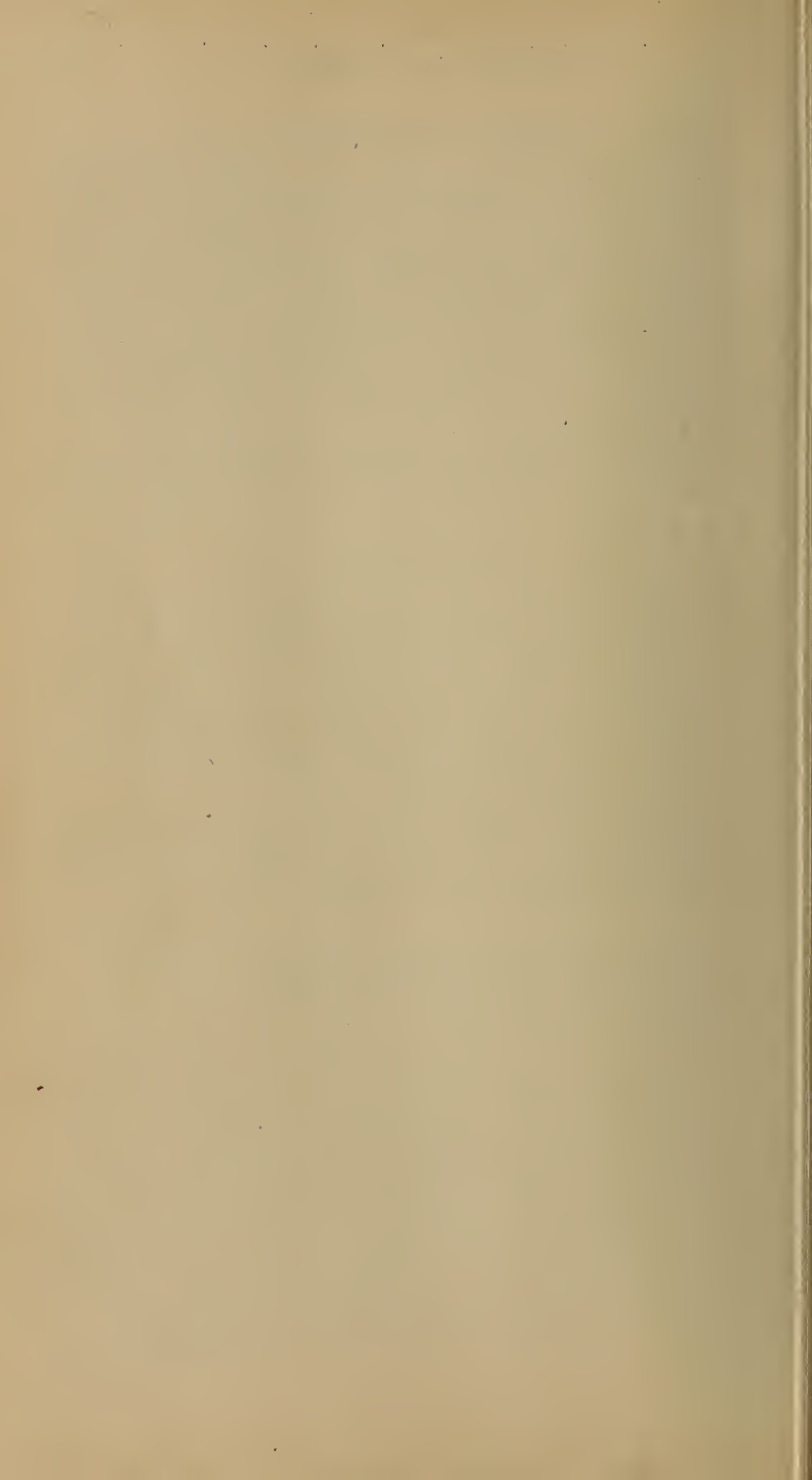
¹ Principles and Practice of Medicine, p. 1080, 2d edition. New York, 1895.

² Bouchard's *Traité de Pathologie générale*, tome ii., p. 682. Paris, 1896.

³ *Ann. de Circ. Med. Argent.*, Buenos Aires, 1890, vol. xii., p. 391.

⁴ *Abst. in Monatshft. f. prakt. Derm.*, Bd. xxvii., S. 593.

⁵ *Brit. Jour. of Derm.*, October, 1900.



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